Cerrahpaşa Med J 2023; 47(3): 274-278 ORIGINAL ARTICLE

When Should Definitive Surgery Be Performed After Sacrococcygeal Pilonidal Sinus Abscess Drainage

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Cite this article as: Guler Y, Sengul S, Calis H, Karabulut Z, Ozen O. When should definitive surgery be performed after sacrococcygeal pilonidal sinus abscess drainage. *Cerrahpaşa Med J.* 2023;47(3):274-278.

Abstract

Objective: The abscess development is one of the common clinical presentations of pilonidal sinus. Treatment in pilonidal sinus abscesses involves allowing secondary recovery following wide local excision with drainage, and excision procedures are performed after a few weeks and after the infection is completely cured. We aimed to investigate the effect of the time interval between the abscess drainage and definitive surgical treatment on the development of postoperative complications in patients who had pilonidal sinus abscess.

Methods: The patients were divided into 2 groups according to the time interval from abscess drainage to sinus excision surgery: patients who underwent sinus excision 1 month after abscess drainage comprised group 1 and patients who underwent sinus excision 3 months after abscess drainage comprised group 2. Sinus excision and primary closure surgery were performed in patients in both groups.

Results: In total, 44 patients (53.0%) underwent sinus excision group 1 and 39 patients (47.0%) underwent sinus excision group 2 after abscess drainage. Postoperative wound infection and wound dehiscence rates were significantly higher in group 1 patients than in group 2 patients ($P < .05$).

Conclusion: We suggest that for reducing postoperative complications, it would be a better approach performing sinus excision after waiting for at least 3 months following drainage instead of performing excision right after recovery of infection or within a few weeks after the abscess drainage.

Keywords: Pilonidal sinus, abscess, infection, recurrence

Introduction

Pilonidal sinus is a chronic disease that occasionally causes discharge in the sacrococcygeal region. It is characterized by one or more openings connected to the sinus developing between the skin and the sacral fascia and opening to the midline skin in the sacrococcygeal region. Its incidence varies regionally and 700 cases per 100 000 were reported[1] and is 2.2 to 4 times more common in men than in women.[2] Pilonidal sinus is usually seen between the ages of 20 and 30 and is more common in some regions and occupations that are considered high risk. Treatment of pilonidal sinus, which is more common in people with low socioeconomic status, can take weeks or even months and has a relapse rate of approximately 34% in 20-year follow-up.[3] Although various methods and surgical techniques have been described in the treatment of pilonidal sinus, the ideal treatment remains controversial. It has been reported that the ideal treatment method should have low complication rates such as infection and wound dehiscence, low recurrence rate, good cosmetic results, and short recovery period.[4]

The common clinical presentations of the pilonidal sinus, which is often clinically asymptomatic, include the development of abscess due to discharge, pain, and infection. It has been reported that abscess develops in approximately half of all pilonidal sinus patients, especially those with chronic discharge.[5] The development of abscess due to pilonidal sinus leads to symptoms such as prominent swelling, pain, discomfort in the sacrococcygeal region, and spontaneous discharge due to delay in treatment.[6] In cultures obtained from sinus abscesses where spontaneous drainage is frequently observed, 77% of the bacterial growth were due to anaerobic microorganisms (bacteriodes and anaerobic cocci), 4% were due to aerobic bacteria, and 17% were due to both aerobic and anaerobic microorganisms.[7] Untreated abscesses extending to the anus may cause perianal sinus formation, which may refer to the possibility of perianal sepsis in 7% of the cases.[6] Treatment in pilonidal sinus abscesses involves allowing secondary recovery following local excision with incision/drainage. Reconstruction and excision procedures are performed after a few weeks and after the infection is completely cured. Recurrence and complication rates after the first surgical treatment differ according to the clinical picture, acute or chronic disease, and surgical treatment modality.[8]

In this study, we aimed to investigate the effect of the time interval between the abscess drainage and definitive surgical treatment on the development of postoperative complications in patients who were admitted to our clinic due to pilonidal sinus abscess and underwent abscess drainage after treatment.

Methods

The study was performed on patients who were admitted to our clinic with a diagnosis of pilonidal sinus abscess between November 2018 and January 2021, who underwent an abscess drainage and antibiotic therapy, and who signed a consent form after primary infection regression. The study was designed prospectively. Age, gender, body mass index (BMI), time of onset of complaint, diabetes and cigarette history, and ASA (American Society of Anesthesiologists) score were recorded in all patients who underwent abscess drainage

Received: November 08, 2022 **Accepted:** February 13, 2023
Publication Date: December 27, 2023
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DOI: 10.5152/cjm.2023.22111

and subsequent sinus excision. Before the abscess drainage of all patients, sinus volumes and volume of pilonidal sinus removed during sinus excision surgery were measured and recorded. In the abscess drainage procedure, all patients underwent an off-midline incision instead of a midline incision. Patients with pilonidal sinus abscess were given oral antibiotic therapy (cefaclor 500 mg tablet p.o. 2×1 and metronidazole 500 mg tablet p.o. 2×1) following drainage, and the infection findings were monitored until complete recovery. The patients were divided into 2 groups according to the time interval from abscess drainage to sinus excision surgery: patients who underwent sinus excision 1 month after abscess drainage comprised group 1 and patients who underwent sinus excision 3 months after abscess drainage comprised group 2. Sinus excision and primary closure surgery were performed in patients in both groups, and patients who underwent different surgical techniques than this method were excluded from the study. Prophylactic antibiotics (cefazolin 1 g 1×1, i.v.) were applied to all patients who underwent sinus excision, and data regarding the postoperative antibiotic treatments, the duration of surgery and length of hospital stay, and use of surgical drain were recorded. Excision was performed in all patients under spinal anesthesia. Postoperative cefaclor tablet 500 mg 2×1 p.o. was given to all patients for a week. All surgeons who applied treatment had at least 5 years of surgical experience. The patients were followed up for 6 months after surgery. Complications such as postoperative wound infection, wound dehiscence, necrosis, seroma, and recurrence within the first 6 months were monitored. Rehospitalization status of the patients who developed complications and recurrences as well as the results of medical and surgical treatment methods were analyzed and recorded.

Exclusion Criteria

Patients with recurrent pilonidal sinus admitted due to abscess, patients operated with different surgical techniques other than primary closure after sinus excision, patients who underwent sinus excision surgery for periods other than 1 and 3 months after abscess drainage, patients who received immunosuppressive therapy, patients who were on regular steroid treatment, patients with cephalosporin hypersensitivity, allergy, and major thalassemia patients were excluded from the study.

Statistical Analysis

Mean, standard deviation, median lowest, median highest, frequency, and ratio values were used in the descriptive statistics of the data. The distribution of variables was measured by Kolmogorov–Smirnov test. In the analysis of quantitative independent data, Mann–Whitney *U* test was used. Chi-square test or Fischer exact test was used in the analysis of qualitative independent data. Fischer exact test was used when chi-square test were not met condicitions. Statistical Package for Social Sciences version 26.0 package program (IBM SPSS Corp.; Armonk, NY, USA) was used in the analysis.

Ethical Approval

This study was approved by the Ethics Committee of Alanya Alaaddin Keykubat University of Medical Sciences on October 26, 2018 (Approval number: 3-11), all of the patients were informed regarding the details of the study, and they signed a consent form.

Results

A total of 123 patients who underwent pilonidal sinus abscess drainage in our clinic were included in the study, 24 patients who were operated with different surgical techniques other than the primary closure of the abscess drainage, and 16 patients who did not come to the operation for 1 or 3 months after the abscess drainage procedure were excluded from the study. Statistical analysis was performed on 83 patients. The gender distribution of the patients was 28 (33.7%) females and 55 (66.3%) males with an average age of 24 years. The mean abscess volume of the patients was 16.3 cm^3, and the mean sinus volume was 27.2 cm^3. After sinus excision, 11 patients (13.3%) had seroma, 22 patients (26.5%) wound infection, 17 patients (20.5%) wound dehiscence, and 10 patients (12.0%) had recurrence at 6 months. Demographic data and clinical characteristics of all patients undergoing pilonidal sinus abscess drainage and sinus excision are presented in Table 1.

Forty-four patients (53.0%) underwent sinus excision 1 month after abscess drainage (group 1), and 39 patients (47.0%) underwent sinus excision 3 months after abscess drainage (group 2).

Table 1. Demographic and Clinical Data of Patients Who Underwent Sinus Abscess Drainage and Pilonidal Sinus Excision

		Min-Max	Median	Mean ± s.d./n%
Age		17.0-39.0	24.0	24.2 ± 4.8
Gender	Female			28(33.7%)
	Male			55(66.3%)
BMI		19.0-30.0	24.0	24.1 ± 2.7
Duration of complaints (year)		2.0-10.0	3.0	2.6 ± 0.6
Duration of operation (min.)		20.0-45.0	35.0	33.7 ± 5.0
			1 day	78(94.0%)
Length of hospital stay (day)			2 days	5(6.0%)
DM				3(3.6%)
Cigarette smoking				13(15.7%)
Comorbid disease	(-)			80(96.4%)
	(+)			3(3.6%)
ASA scores	I			73(88.0%)
	II			10(12.0%)
Abscess volume (mL)		6.2-46.1	16.3	20.2 ± 10.3
Sinus volume (mL)		18.1-64.5	27.2	31.6 ± 11.4
Prophylaxis				83(100.0%)
Drain				51(61.4%)
Postop. oral antibiotic				83(100.0%)
Wound infection				22(26.5%)
Seroma				11(13.3%)
Wound dehiscence				17(20.5%)
Necrosis				0.0(0.0%)
Recurrence				10.0(12.0%)

ASA, American Society of Anesthesiologists Score; BMI, body mass index; DM, diabetes mellitus.

There was no statistically significant difference in seroma and recurrence rates in group 1 and group 2 patients. The wound infection rate in group 1 and group 2 (36.4% vs. 15.4%) and the wound dehiscence rate (29.5% vs. 10.3%) were calculated. Postoperative wound infection and wound dehiscence rates were significantly higher in group 1 patients than in group 2 patients ($P < .05$). Demographic and clinical data of group 1 and group 2 patients are presented in Table 2.

Discussion

There are different treatment options for acute abscess development, which commonly occurs in pilonidal sinuses. One of the most frequently used methods for pilonidal sinus abscess is drainage and late curative surgery after appropriate antibiotic treatment. During the abscess drainage process, it is recommended that the incision during the subsequent excision procedure need not be closed asymmetrically, and for a faster healing, it is recommended to perform an offline incision instead of the midline.[9] Another option is hair removal from the sinus and curettage of granulation tissue along with abscess drainage.[6] In order to perform curettage with drainage, it is recommended to make a 2.5-cm long incision in the midline and continue the definitive excision procedure for 7 days.[10] The most important advantages of drainage and curettage are that the symptoms improve in a short time and return to work early.[11] It was reported that the recurrence rate of this method was 25% in 1.5-year follow-up.[12] In the simple abscess drainage process, after the drainage with wide local excision, which is not included much healthy tissue, secondary wound healing is provided by antibiotherapy, and curative surgery is performed with sinus excision after waiting for at least a few weeks.[8] In addition to these procedures, some surgeons recommend antibiotic treatment as a treatment option following the evacuation of the abscess by needle aspiration.[13]

One of the most common problems encountered in the pilonidal sinuses after surgery is wound infection, delay in wound healing, wound dehiscence, and recurrence occurring due to

Table 2. The Distribution of the Patients with Pilonidal Sinus Abscess According to the Operation Time After Abscess Drainage, the Demographic data, and Clinical Characteristics

		Group I		Group II		
		Med. ± s.d./n%	Med	Med. ± s.d./n%	Med	*P*
Age		23.6 ± 4.4	24.0	24.9 ± 5.2	24.0	.394[m]
Gender	Female	15(34.1%)		13(33.3%)		.942[χ2]
	Male	29(65.9%)		26(66.7%)		
BMI		23.8 ± 2.5	24.0	24.3 ± 2.8	24.0	.461[m]
ASA	I	36(81.8%)		37(94.9%)		.068[χ2]
	II	8(18.2%)		2(5.1%)		
Duration of complaints (year)		2.6 ± 0.6	3.0	2.6 ± 0.6	3.0	.553[m]
Abscess volume (mL)		20.6 ± 11.2	15.8	19.7 ± 9.4	17.5	.880[m]
Duration of operation (minutes)		33.5 ± 5.8	35.0	34.0 ± 4.0	35.0	.821[m]
Sinus volume (mL)		32.4 ± 12.5	26.4	30.8 ± 10.2	27.2	.722[m]
Cigarette smoking		7(15.9%)		6(15.4%)		.948[χ2]
DM		2(4.5%)		1(2.6%)		1.000[χ2]
Comorbid disease		2(4.5%)		1(2.6%)		1.000[χ2]
Wound infection		16(36.4%)		6(15.4%)		***.031***[χ2]
Wound dehiscence		13(29.5%)		4(10.3%)		***.030***[χ2]
Seroma		7(15.9%)		4(10.3%)		.448[χ2]
Necrosis		0(0.0%)		0(0.0%)		1.000[χ2]
Recurrence		6(13.6%)		4(10.3%)		.637[χ2]
Prophylaxis		44(100.0%)		39(100.0%)		1.000[χ2]
Drain		29(65.9%)		22(56.4%)		.375[χ2]
Length of hospital stay (day)	1 day	42(95.5%)		36(92.3%)		.548[χ2]
	2 day	2(4.5%)		3(7.7%)		

[m]Mann–Whitney *U* test/[χ2]Chi-square test.
ASA, American Society of Anesthesiologists Score; BMI, body mass index; DM, diabetes mellitus.

these conditions. Although many surgical techniques have been defined in order to reduce these complications,[14] the ideal surgical technique should be simple and aim to remove the entire sinus. Furthermore, the risk of low recurrence, short hospital stay, minimal postoperative pain, good cosmetic results, and low risk of infective complications should be achieved.[15] Considering all these factors, each of the described surgical techniques has advantages and disadvantages compared to the other. In a meta-analysis study involving 559 patients, when open healing and all closed techniques were compared, it was found that the rate of postoperative infection was higher in the open method, although there was no statistically significant difference.[16] Similarly, there are studies reporting that the rate of infection in the open method is higher, albeit a little.[17] However, there are also studies that reported that the open method do not increase the infection risk compared to the closed technique.[18] Studies reported that in patients who underwent excision and primary closure technique, wound infection developed at rates ranging from 2% to 42% after surgery.[19-21] It has been reported that recurrence rates in pilonidal sinuses vary with the duration of follow-up, and in long-term follow-up, these rates increase up to 60% in 22-year follow-up.[20]

In the treatment of pilonidal sinus, reducing the infective complications that develop after surgery is especially important in terms of preventing wound dehiscence and lowering the risk of recurrence. Hence, in order to avoid postoperative complications in pilonidal sinuses with abscess formation, the complete regression of the infection and timing of curative surgery after abscess drainage are crucial. The general approach among surgeons is to wait for a few weeks following abscess drainage and apply the excision procedure after complete regression of the infection.[8] In our study, all patients who developed pilonidal sinus abscess were excised after abscess drainage and primary closure was performed in the middle line, and patients were divided into 2 groups as 1 month and 3 months in terms of the time of excision. There was no statistically significant difference between patients' age, gender, BMI value, ASA score, smoking rate, diabetes, surgical drain use, abscess, and extracted sinus volumes. Metronidazole and cefaclor, which are effective against anaerobic and aerobic microorganisms known to be frequently isolated in abscess cultures, were preferred after abscess drainage. Therefore, the patient group in our study can be considered as a homogeneous group. In patients who underwent excision 1 month after abscess drainage, seroma incidence was 15.9%, wound infection rate was 36.4%, and wound dehiscence rate was 29.5%, whereas in patients who had excision procedure after 3 months, it was 10.3, 15.4, and 10.3%, respectively, and postoperative wound infection and wound dehiscence rates were found to be statistically significantly lower in patients who underwent excision after 3 months. Analysis of recurrence rates at 6-month follow-up revealed that although no statistically significant difference was found, the rate of recurrence was found to be lower in patients who underwent excision after 3 months after abscess drainage compared to those who underwent excision 1 month after the drainage (13.6%/6 months in patients who underwent excision after 1 month and 10.3%/6 months in patients who underwent excision after 3 months). There was no statistically significant difference in seroma and recurrence rates in group 1 and group 2 patients; however, postoperative wound infection and wound dehiscence rates were found to be statistically significantly higher in group 1 patients than in group 2 patients. Our recurrence rate was high, and we think that using a midline incision during abscess drainage may increase the risk of recurrence. There is a need for future an off-midline incision for closure in post drainage abscess.

According to our review, there is no study in the English literature where pilonidal sinuses are treated only after sinus abscess has developed; however, different infection and recurrence rates have been reported in studies involving all pilonidal sinus patients. Postoperative infection rate was 14.5%, wound dehiscence rate was 3.6%, and recurrence rate was 9.1% in a 6-month follow-up study in which 27.3% of the patients were infected and 7.3% were treated with abscess drainage and treated with excision and primary closure.[21] In a study in which 14% of patients had pilonidal sinus abscess and 50 patients underwent excision and primary closure, the seroma rate was 12% and the infection rate was 2%.[19] In a study examining 23 patients with and without abscess prior to sinus excision, the rate of infection after excision was reported to be 25% in patients with a history of sinus abscess before surgery.[8] Recurrence rates varying between 8.4% in 1.5-year follow-up and 44% in 20-year follow-up have been found in midline closure technique, and patients treated with the open method have been reported to have a lower risk of recurrence compared to the closed technique.[22,23] In addition, there are studies reporting recurrence rates of 8.4% at 1-year follow-up and 16.8% at long-term follow-up in patients treated with the midline closure technique after excision, while there are other studies reporting that the risk of recurrence is lower in the midline closure method compared to the open surgical technique.[24] In another study in which 11% of patients had pilonidal sinus abscess preoperatively, the recurrence rate was reported as 10.8% at 6-month follow-up after excision and primary closure.[25] In our study, only patients who developed sinus abscess and who had sinus excision and midline primary closure technique after abscess drainage were included. We found that the recurrence and especially infection rates were higher (13.6%/6 months) in patients who were operated 1 month after abscess drainage compared to the literature. We also found that in patients who underwent operation after 3 months, these rates were lower than patients who were operated 1 month after abscess drainage and similar to those reported in the literature.

Conclusion

As a result of the findings obtained from our study, it has been ascertained that the timing of surgical excision in pilonidal sinus patients with abscess is important in preventing complications such as postoperative infection, wound dehiscence, and recurrence. Considering our low rates of infection, wound dehiscence, and recurrence, we believe that for reducing postoperative complications, it would be a better approach performing sinus excision after waiting longer than 1 month following drainage instead of performing excision right after recovery of infection or within a few weeks after the abscess drainage, which are both commonly applied clinical practices.

Ethics Committee Approval: Ethical committee approval was received from the Ethics Committee of Alanya Alaaddin Keykubat University (Approval no: 3-11, Date: October 26, 2018).

Informed Consent: Written informed consent was obtained from the patients who agreed to take part in the study.

Peer-review: Externally peer-reviewed.

Acknowledgments: We thank all our patients who participated in this study.

Author Contributions: Concept – Y.G., S.S.; Design – H.C.; Supervision – Z.K.; Resources – Y.G., S.S., H.C.; Materials – Y.G.; Data Collection and/or

Processing – O.O.; Analysis and/or Interpretation – Z.K.; Literature Search – Y.G.; Writing Manuscript – Y.G.; Critical Review – S.S.

Declaration of Interests: The authors have no conflict of interest to declare.

Funding: The authors declared that this study has received no financial support.

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