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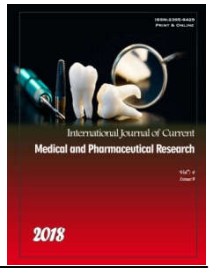

A COMPARISON OF FUNCTIONAL AND COSMETIC OUTCOMES OF LIMBERG FLAP METHOD WITH PRIMARY REPAIR IN PILONIDAL SINUS SURGERY

Yusuf Atakan BALTRAK., Deniz ERSAYIN GÜRER and Seniha Esin SÖGÜT

SBU Kocaeli Derince Education and Research Hospital Department of Pediatric Surgery

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ABSTRACT

Pilonidal sinus is a chronic disease of the gluteal region. This study has retrospectively investigated the functional and cosmetic outcomes in the patients who underwent surgeries, where Limberg flap (LF) or primary repair (PR) methods, were used in our clinic due to a pilonidal sinus.

A total of 36 patients, who were operated due to the diagnosis of a pilonidal sinus between June 2015 and June 2017, were included in the study. The following data associated with the patients were recorded, including the age, gender, findings at the operation, the postoperative complications, complaints in the gluteal regions due to the incision line, and the recurrence status. In addition, during the follow-up period, the satisfaction and complaints of the patients in both groups were recorded in regards to the surgery they underwent.

Of the patients included in the study, 24 were males and 12 were females. The average age of the patients was 16.5. In the group of patients who underwent a primary repair, a surgical wound infection in three patients, a wound dehiscence in one patient, and recurrences in two patients were observed in the early postoperative period. In the patient group who were operated with LF method, a recurrence was observed in one patient in the late postoperative period. The mean level of patient satisfaction in the third postoperative month was 2.73±0.88 in the PR group and 3.06±0.70 in LF group.

The functional and cosmetic outcomes of the Limberg flap method or the primary repair method used in the pilonidal sinus surgery are open to debate. It is suggested that further extensive prospective studies are required on this subject.

INTRODUCTION

Pilonidal sinus disease (PSD) is a common chronic disease with a benign course in the sacrococcygeal region. The most commonly recognized theory explaining the etiology of the disease is the foreign body reaction developing in the hair follicles.

Despite the various surgical methods employed in the treatment, there is not an ideal treatment identified as of today. The treatment of the pilonidal sinus is still one of the controversial entities. The advantages and disadvantages of all existing treatment methods with no superiorities of one over the others have led more studies to be conducted to determine an ideal method of treatment[1].

The relatively higher rate of recurrences observed with the pilonidal sinus excision and with the primary repair method, as well as the problems in wound healing seen after partial closing, are the important issues. Our present study aimed to investigate the functional and cosmetic outcomes of LF and PR methods commonly used in the treatment of pilonidal sinus over the last years.

MATERIAL AND METHODS

A total of 36 patients were included in the study, who were diagnosed with a pilonidal sinus and who were operated with LF and PR methods after pilonidal sinus excision between June 2015 and June 2017. The patient data of both groups of patients including the height, body weight, and the body mass index (BMI) values were recorded in the pre-operative period. The patients were recommended to remove the hair in their intergluteal regions using a depilatory cream and to wash those regions with an antibacterial soap on the day of surgery before the operation. All patients were applied a bowel enema in the morning on the day of the surgery. During the induction of anesthesia before the surgery, all patients were given one gr cefazolin sodium intravenously. The surgery was performed applying spinal anesthesia to all study patients after determining that they were all in the ASA 1 risk group. The intergluteal region was exposed by means of a plaster attached to the edge of the operating table. While applying LF technique, the diseased area was excised in a rhomboid shape to cover all sinus openings in the area after administering methylene blue via the opening of the sinus. The regional

Corresponding author:* **Yusuf Atakan BALTRAK
SBU Kocaeli Derince Education and Research Hospital Department of Pediatric Surgery

defect was then closed by using a cutaneous-subcutaneous flap elevated from the right gluteal region.

Figure 1 Pilonidal sinus disease

Figure 2 Primary Repair

Figure 3 Rhomboid excision and elevation of a Limberg flap

In all patients who were operated with the Limberg flap method, a Hemovac drain was introduced into the operated site after controlling the bleeding. The Hemovac drain was removed when the drained fluid was reduced to a volume below 10 cc/day. Sultamicillin 150 mg/kg/day was administered routinely in three divided doses intravenously in the postoperative period. The patients who were operated with LF method were recommended to have a bed rest for two weeks and follow-up visits in the outpatient clinic to take place fourteen days later following the discharge from the hospital were scheduled for these patients. In the patient group, to whom PR was applied, methylene blue was administered via the opening of the sinus and then the diseased area was excised totally after performing an elliptically shaped incision around the sinus. The created defect in the surgical site was closed primarily after controlling the bleeding. Drains were not used in the patients who were operated with PR. A follow-up visit to take place 10 days later in the outpatient clinic was scheduled for each of these patients. The patients from both groups were evaluated for the functional and cosmetic outcomes of the operation in the outpatient clinic three months later after the surgery if they did not have any problems in the follow-up visits in the outpatient clinic. In the postoperative third month, the patient satisfaction from the surgery was evaluated and scored as poor (1 point), moderate (2 points), good (3 points), and excellent (4 points). When the patients could not appear at the follow-up visits, they were called on the phone and questioned about their satisfaction and complaints associated with the operation they underwent. The following patient data were recorded, including the age, gender, the findings at the operation, postoperative

complications, complaints related to the incision in the gluteal region, the recurrence status, and patient satisfaction from the surgery. The statistical analysis of the data was performed with SPSS 17 software. The numerical values were presented in means with standard deviations. The permission to conduct this retrospective study in our clinic was granted by TUEK committee of our hospital with the registry number 30278912.

RESULTS

In our clinical patient series, 24 (66.6%) patients were males and 12 (33.3%) were females. The median age was 16.5. The pre-operative body mass index (BMI) of the patients was calculated to be 25.8±8.3 kg/m^2 in the PR group and 25.3±1.8 kg/m^2 in LF group. There was not a statistically significant difference between the two groups in regards to the BMI (p=0.92). Of the study patients, 16 (44.4%) were operated with the PR method and 20 (55.6%) were operated with LF method. The duration of hospital stay was 2.12±0.34 days in the PR group and 3.25±0.44 days in LF group. The difference between the two groups was not statistically significant in regards to the duration of hospital stay in days (p=0.41). The duration of the operation was 36.11±11.05 minutes in the PR group and 73.20±8.36 in LF group. The difference between the two groups in terms of the duration of operation was significant in favour of the PR group (p<0.05). The PT patients were discharged from the hospital 48 hours after the operation and LF patients were discharged from the hospital no later than 48 hours after the removal of the Hemovac drain. In the PT group, a surgical wound infection in three patients, a wound dehiscence in one patient, and a recurrence in 2 patients occurred in the early postoperative period. The surgical wound infection and wound dehiscence were treated with drainage, antibiotic treatment, and revision of the wound successfully. The patients who had a recurrence after PR were operated once more with LF method and they were treated successfully, too. The most common complaint in the PR group was the pain in the surgical wound site in the late postoperative period (six patients). The patient satisfaction in the postoperative period was scored 2.73±0.88 in the PR group in the postoperative period. Recurrences, a wound dehiscence, and infection had developed in the six PR patients who scored their satisfaction as poor.

Figure 2 The Postoperative Image of a Surgical Site Where a Limberg Flap Was Applied.

In LF group, the postoperative patient satisfaction was scored 3.06 ± 0.70. The difference between the PR and LF groups was not significant in regards to the results obtained from the patient satisfaction questionnaire (p>0.05). In LF group, only one patient had a recurrence in the third month in the postoperative period. This patient underwent another operation using Karydakis procedure. Pain, itching, and tension complaints developed in the late postoperative period in four (25%) patients in the PR group and in three (15%) patients in LF group, making a total of seven (19.4%) patients.

DISCUSSION

The pilonidal sinus disease is a chronic disease, characteristically affecting the young adults. It is a benign clinical entity, which was first described by Herbert Mayo in 1833. The incidence of the disease is reported to be 26/100,000[2,3]. A pilonidal sinus is a chronic and benign disease commonly seen on the natal cleft line in the sacrococcygeal area. Congenital and acquired theories have been proposed on the etiology of the disease. The acquired theory proposed by Bascom and Karydakis has been the most commonly recognized theory recently[4]. The acquired theory proposes that the reactions developing in the hair follicles are the major causes of the pilonidal sinus. Microabscesses, triggered by microtraumas, in the intergluteal region eventually evolve into larger, painful and draining foci. Hair in the pilonidal sinus cysts causes chronic drainage and the development of abscesses, by creating foreign body reactions and irritation. Although the hair plays an important role in the pathogenesis of the pilonidal sinus, there is no hair in each of every pilonidal sinus cyst. This condition is seen at a rate of 25-50%[5]. Pilonidal sinus is observed in the form of tracts of 1-5 cm in length in the subcutaneous regions. The tracts developing in the pilonidal sinuses secondarily usually course in the cranial direction, whereas, an extension to the caudal region is seen less frequently. Caudal extensions of the disease may be required to differentiate from the perianal fistula tracts. Although the disease has a benign nature, malignant transformations may occur rarely[6]. A pilonidal sinus may be identified without any clinical signs and symptoms or it may be manifested with an acute or chronic abscess formation. Chronic cases of pilonidal sinus have characterized appearance with draining sinus openings in the intergluteal sulcus. Pilonidal sinus is more common in obese and male individuals, who have denser hair follicles, a poor personal hygiene, a deeper intergluteal sulcus, and who work in the sitting position for relatively longer periods of time[7]. The treatment of acute pilonidal abscesses should involve a drainage from a region not on the midline, a curettage of the cavity of the abscess, or an effective evacuation of the content inside the cavity. The preferred surgical method in chronic cases should be decided while considering the extension of the pilonidal sinus in the patient[8]. There are studies available in the literature, reporting lower rates of recurrences in the pilonidal sinus surgery where flap techniques have been employed[9]. Despite the several available modes of treatment today, none of these treatment modalities has been established as the golden standard. The targeted treatment aims of the pilonidal sinus surgery include lower rates of recurrence, shorter periods of hospital stay, going back to work sooner, and minimum rates of complications arising from the surgical wound site.

Flap techniques have gained a popularity in the pilonidal sinus treatment in recent years[10,11]. A Limberg flap is the most

common operation method used in the treatment[12,13]. The major critical point in this surgical technique is closing the surgical wound site primarily without any tension after the excision of the diseased area. It should be noted that the intergluteal region disappears after the rotation of the flap. The patient satisfaction in the postoperative period was scored 2.73±0.88 in the PT group in our study. In the PT group, six patients, who developed either of a recurrence, wound dehiscence, or infection, reported their satisfaction from the surgery as poor in the postoperative period. Of all the patients in the study, six of them scored the outcomes of the surgery as poor. The patient satisfaction was 3.06±0.70 in LF group in the postoperative period. A recurrence developed in one patient in this group. The complaints arising from the incision site were remarkable in both groups of patients in the late post-operative period. In our patient series, a total of seven patients, who were operated either with PR or LF method, developed complaints of pain, numbness, and tension in the surgical site. In a prospective study, Müller *et al*. investigated the cosmetic outcomes, rates of morbidity, and patient satisfaction after performing Limberg flap technique. They reported the cosmetic outcomes of Limberg flap technique as insufficient. The cosmetic outcomes of our study had similar characteristics with the study conducted by Müller *et al*.[14].

In conclusion, the functional and cosmetic outcomes of LF and PR techniques used in the pilonidal sinus surgery are open to debate. It is suggested that there is a need for further extensive and prospective studies.

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