



Recurrence is not the Only Problem with Sacrococcygeal Pilonidal Sinus Disease: A Comparison between Microsinusectomy and Limberg Flap Technique

Sakrokoksigeal Pilonidal Sinüs Hastalığında Tek Sorun Nüks Değil; Mikrosinüsektomi ve Limberg Flep Tekniklerinin Karşılaştırılması

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ABSTRACT

Aim: The aim of this study was to compare Limberg flap technique (LF) with microsinusectomy technique (MS) for the treatment of sacrococcygeal pilonidal sinus disease (SPS), in terms of early postoperative outcomes.

Method: Ninety-six patients who underwent LF or MS for SPS at two different centers between October 2017 and October 2018 were included. The patients were evaluated retrospectively. The primary endpoints comprised of the duration of incapacity for work and postoperative patient's comfort and capabilities, while the secondary endpoints included postoperative complications, first-year satisfaction, and recurrence rates.

Results: The demographic data were similar in both LF and MS groups. The median operating times (60 vs. 18 minutes; $p<0.01$) and median length of stay (26 vs. 2 hours; $p<0.01$) were significantly shorter in the MS group. Postoperative pain scores were comparable in both groups. Postoperative complications were significantly higher in the LF group (61.1% vs. 6.7%, $p<0.01$). Pain-free walking (11.4 vs. 2.15; $p<0.01$) and return to work (26.2 vs. 5.15; $p<0.01$) were significantly lower in the MS group. Postoperative first-year satisfaction and recurrence rates were comparable.

Conclusion: Despite similar satisfaction and recurrence rates to LF, MS might be preferred due to its shorter hospital stay, lower risk of complication and more rapid return to work and normal activities.

Keywords: Microsinusectomy, complication, comfort, return to work

ÖZ

Amaç: Bu çalışmada, sakrokoksigeal pilonidal sinüs hastalığının (SPS) tedavisinde Limberg flep (LF) tekniği ile mikrosinüsektomi (MS) tekniğinin erken dönem postoperatif sonuçlarının karşılaştırması amaçlandı.

Yöntem: Ekim 2017 ile Ekim 2018 arasında farklı iki merkezde SPS için LF ve MS uygulanan 96 hasta dahil edildi. Hastalar geriye dönük olarak değerlendirildi. Çalışmada birincil sonlanım; iş göremezlik zamanı, ameliyat sonrası hasta konforu ve rahatlığı; ikincil sonlanım noktaları ise postoperatif komplikasyonlar, birinci yıl hasta memnuniyeti ve nüks oranlarıydı.

Bulgular: Demografik veriler her iki grupta da benzerdi. Ortanca ameliyat süresi (60 dakika vs 18 dakika; $p<0,01$) ve ortanca hastanede kalış süresi (26 saat vs 2 saat; $p<0,01$) Postoperatif ağrı skorları her iki grupta benzerdi. Postoperatif komplikasyonlar LF grubunda anlamlı olarak daha yüksekti (%61,1 vs %6,7; $p<0,01$). Ağrısız yürüme (11,4 gün vs 2,15 gün; $p<0,01$) ve işe dönüş (26,2 gün vs 5,15 gün; $p<0,01$) MS grubunda anlamlı olarak daha düşüktü. Postoperatif birinci yıl hasta memnuniyeti ve nüks oranları benzerdi.

Sonuç: MS tekniği, LF tekniği ile benzer memnuniyet ve nüks oranlarına sahip olmasının yanında, hastanede kalış süresinin kısa, komplikasyon oranlarının düşük, işe ve günlük aktivitelere hızlı dönüş olması nedeniyle öncelikli olarak tercih edilebilir.

Anahtar Kelimeler: Mikrosinüsektomi, komplikasyon, konfor, işe dönüş



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Introduction

Pilonidal sinus is a cystic disease that most often affects the sacrococcygeal region. It disrupts daily activities and life comfort and its surgical treatment causes long-term labor loss. The prevalence of sacrococcygeal pilonidal sinus (SPS) disease has increased in recent years, and the currently estimated incidence is 26 per 100,000 per year in the general population.¹ Although SPS treatment appears simple, the socioeconomic burden is quite high as young people between 20 and 30 years of age are at risk. The treatment takes weeks to months and the reported overall recurrence rates at 20 years follow-up reach 34%.²

The ideal treatment for pilonidal sinus should include a short hospitalization period, low risk of complications, rapid return to normal activities, low cost and should be associated with a low recurrence rate.^{3,4} The Limberg flap technique is frequently used for the treatments of SPS. However, it does not fulfill the criteria to be an “ideal” surgical treatment for SPS.

Therefore, the aim of the present study was to compare LF and the microsinusectomy techniques (MS) in terms of clinical outcomes and patient acceptability.

Materials and Methods

Patients who underwent surgery for SPS with LF and MS in Bayburt State Hospital and Bursa Private Aritmi Osmangazi Hospital, from October 2017 to October 2018, were evaluated retrospectively. This study was approved by the institutional review board.

The demographics of the patients, presence of initial abscess, length of stay, postoperative complications, duration of wound healing, postoperative pain scores as assessed using a visual analogue scale (VAS) with 0 = no pain and 10 = most intolerable pain, pain-free walking time without the use of painkiller, time to return to work, satisfaction in the first year and recurrence rates in the first year were compared between the two groups.

The SPS was divided into five types, as classified by Irkörücü et al.⁵ These are: Type I - pit(s) on the natal cleft; Type II - pit(s) on either side of the natal cleft; Type III - pits on both sides of the natal cleft; Type IV- complex SPS with multiple pits on and beside the natal cleft; and Type V - recurrent SPS.

Inclusion criteria comprised: patients older than 16 years of age; American Society of Anaesthesiologists (ASA) type 1 and 2 patients; and SPS type 1, 2 and 3 patients. Exclusion criteria comprised: ASA type 3, 4, 5 and 6 patients; SPS type 4 and 5 patients; patients with penicillin allergy; and patients who were not available for follow-up.

After the patients were evaluated at the outpatient clinic and informed about both the methods, they were asked to choose which surgical technique they would prefer to undergo. All surgical operations were performed by one of two different surgeons, with the patient in prone position, using standard methods. LF was performed by a standard method as defined by Käser et al.¹ without the use of methylene blue, under spinal anesthesia. For MS, the patient was brought into a supine position and the shaved and buttocks were separated by bands. The orifice of the pilonidal sinus was probed in each case. The orifices and sinus were then closely excised under local anesthesia with a scalpel or scissors over a 2 cm elliptical, mini-incision, which also included the pilonidal cyst. After hemostasis was achieved, the wounds were left open to heal. All patients were instructed to clean the wound in the shower at least once a day until complete healing was achieved (Figure 1). Second-generation cephalosporin was administered in a single intravenous dose before either technique was performed. No postoperative antibiotic treatment was given. If an abscess was present, it was first drained by a small incision under local anesthesia followed by oral amoxicillin and clavulanic acid for 7-10 days at a dose of 2x1 g per day. After two weeks, either of the two surgeries was performed.

Postoperatively, patients were assessed on the first, third, seventh and fourteenth days and on the first, third, and sixth months and at one year. At the end of the first year, recurrence was assessed and a satisfaction score questionnaire was completed by each patient. Satisfaction scores ranged from 0 to 10 (0 = not at all satisfied, 10 = completely satisfied).



Figure 1: The appearance of the healing wound after microsinusectomy

The primary endpoints included the duration of incapacity for work and postoperative patient's comfort and patient acceptability, while the secondary endpoints included postoperative complications, first-year satisfaction, and recurrence rates.

The results were expressed as median and range. For statistical analyses, two-sided Fisher's exact test was used for categorical data and the Mann-Whitney U test was used for numerical data. A p value of less than 0.05 was considered to be significant.

Results

Out of 147 patients treated at the two centers for one year, 96 patients who met the inclusion criteria were included in the study. Demographics and perioperative data of the patients were evaluated and are presented in Table 1. The operative time ($p<0.01$) and length of stay ($p<0.01$) were significantly shorter in the MS group.

Wound healing time, postoperative VAS pain scores, postoperative complications, pain-free walking and time to return to work were assessed and are given in Table 2. In the LF group, postoperative complications were worse ($p<0.01$), pain-free walking was worse ($p<0.01$) and return to work was longer ($p<0.01$) than in the MS group. Postoperative

complications in LF were: wound dehiscence in 14 (38.8%), skin necrosis in four (11.1%), wound infection in two (5.6%), and hematoma in two (5.6%). In the MS group the only complication encountered was bleeding in four (6.7%) patients.

The satisfaction scores and recurrence rates at the end of the first year were compared and the results were found to be similar for both the groups ($p=0.57$ and $p=1.0$, respectively) (Table 3).

Discussion

The optimal surgical treatment for SPS has not yet been identified and the optimal therapy for SPS is also still under debate, so different surgical techniques are used. This study investigated clinical outcomes and patient comfort and acceptability. In patients undergoing MS the duration of surgery and length of stay and time to pain free walking were shorter, postoperative complication rates were lower, and return to work was earlier. Clinical outcomes appeared to be generally better in the MS group compared to the LF group and thus MS could be safely chosen with clinical results in SPS treatment.

Surgery is the central treatment option for SPS. Although minimally invasive procedures, such as lay-open, removal

Table 1. Patients' demographics and perioperative details

	LF (n=36)	MS (n=60)	p value
Age	23.5 (16-45)	23 (16-44)	0.92
Male gender (%)	83.3% (n=30)	81.7% (n=49)	0.78
Presence of initial abscess (%)	23.3% (n=14)	22.2% (n=8)	0.96
Median interval between incision and definitive surgical treatment (days)	13 (12-15)	13 (12-14)	1
Median operating time (minutes)	60 (35-80)	18 (12-25)	<0.01
Median length of stay (hours)	26 (18-112)	2 (1-3)	<0.01

LF: Limberg flap technique MS: Microsinusectomy technique

Table 2. Postoperative outcomes

	LF (n=36)	MS (n=60)	p value
Wound healing (days)	16 (14-19)	22 (18-30)	0.18
Postoperative first day VAS	3 (1-6)	3 (2-7)	0.46
Postoperative fourteenth day VAS	2 (0-4)	2 (0-3)	0.52
Postoperative complications (%)	61.1% (n=22)	6.7%(n=4)	<0.01
Pain-free walking (days)	11.5 (6-17)	2 (1-5)	<0.01
Return to work (days)	25 (20-40)	5 (2-9)	<0.01

LF: Limberg flap technique MS: Microsinusectomy technique VAS: Visual analog scale

of hair only, curettage and phenol treatment are performed, the recurrence rates are higher when these techniques are used.^{4,6} More invasive procedures, such as flap techniques including LF and V-Y advancement, Z-plasty, and Karydakias flap, have been described by some as overtreatment for SPS because large tissue displacements are involved.⁶ Another significant factor is that wound healing along the midline is faster than that away from the midline while the complications and recurrence rates for flaps are reported to be lower.⁷ Therefore, flap techniques are preferred for off-midline healing.⁸ However, because comparative studies for MS using novel and less invasive techniques are limited in number, it is usually not the first choice. The biggest problem with a flap technique is the long period before return to normal daily activity together with poor post-operative patient comfort and patient acceptability. Therefore, the present study was performed not only to compare the rates of recurrence and postoperative complication, but also the time to return to daily activity and postoperative patient comfort and acceptability.

To prepare patients for the SPS surgery, any technique of anesthesia including local, spinal, and general anesthesia may be used. Almost all of the MS techniques can be performed with local anesthesia. LF is usually performed under spinal anesthesia or general anesthesia. This difference in anesthesia directly affects the discharge time and postoperative early period. General anesthesia is not preferred due to positional respiratory problems other than the side effects of general anesthesia itself.⁹ Patients undergoing spinal anesthesia are admitted to the hospital for an average of 24 hours, taking into consideration the duration of the spinal blockade and possible side effects.^{1,10} In contrast, patients undergoing local anesthesia can be discharged immediately after the procedure.⁹ However, patients administered local anesthesia may rarely experience allergic dermatitis and toxicity at high doses. When the MS technique is performed under local anesthesia, the duration of surgery and the length of stay in the hospital are remarkably shortened compared to flap techniques. Therefore, the cost of MS surgery is lower because of a reduction on health care resource usage, including less medical equipment, shorter operating time and shorter length of stay. In addition, emotional effects may be less due to the short time spent in the operating

room and because hospitalization is not required. Indeed, in the present study, all of the MS techniques were performed under local anesthesia. However, if spinal anesthesia was administered for MS techniques, the duration of hospitalization would be prolonged due to the effect of the anesthetic technique. The duration of operation is a major disadvantage in LF technique.¹¹

In the present study, even though wound healing time was similar, return to work and return to daily life were noticeably faster in the MS group. Earlier studies have presented contradictory findings. Testini et al.¹² demonstrated that a flap method was more advantageous as compared to excision and secondary wound healing with respect to the time required to return to work. However, a study by Ersoy et al.¹³ reported no difference in the time required to return to work when comparing LF and primary closure. A meta-analysis reported a range of 3-42 days for return to work in different types of procedures.⁷ However, patients who undergo MS are more comfortable in the postoperative period because of the lack of extensive excision, a smaller incision, a lower rate of complication and lack of tightness, as there is no suture. Thus, the time taken to return to normal daily activity and that required to return to work are thought to be shorter. Although the open wound may seem to be a disadvantage, only a few minutes of wound care are needed and pain does not require any analgesic and does not prevent daily activities.

The complications in the LF group mainly included wound dehiscence and skin necrosis. Some surgeons ignore wound dehiscence. To avoid this well-known complication, some surgeons prefer a modified LF technique, placing the lower pole 1-2 cm lateral to the midline.^{1,14} In this study, a modified LF technique was not applied in any of the patients and wound dehiscence was seen in almost one-third of them. The only postoperative complication detected in the MS group was bleeding. The bleeding was controlled in the outpatient room immediately after readmitting the patient. Other studies have reported bleeding after excision in 0%-2.8% of cases.^{4,6,12} In this study, the rate of bleeding after MS technique was higher at 6.7%. This can be explained by the fact that in relation to the excision, MS is performed from a much smaller incision, and thus the exposed area is not as wide as the excision.

Table 3. First-year satisfaction, recurrence rates

	LF (n=36)	MS (n=60)	p value
Postoperative first year satisfaction score (0-10)	7 (5-10)	8 (5-10)	0.57
Postoperative first year recurrence (%)	2.77% (n=1)	1.66% (n=1)	1

LF: Limberg flap technique MS: Microsinusectomy technique

Studies comparing the LF with the excision technique have reported lower recurrence rates in the LF technique. However, studies comparing MS are rare.^{15,16} In our study, the recurrence rates were found to be similar in both the LF and MS techniques (2.77%-1.66%). However, in a long-term study by Doll et al.,² the 20-year recurrence rate was up to 34%, which indicates an increase and difference in recurrence rates. Furthermore, as wound complications significantly influence the long-term recurrence rate^{1,17}, it can be anticipated that the long-term recurrence rate in the LF group would be higher than that in the MS group.

Study Limitations

Limitations of this study include the retrospective design, Type II error, possibility of bias due to lack of randomization, possibility of bias in patient selection and short follow-up. Although one-year follow-up is sufficient in terms of evaluation of the postoperative comfort and patient acceptability, it will be insufficient to get a clear picture of recurrence rates. The lack of patients in the MS group undergoing spinal anesthesia is another limitation of the study; the authors recommend local anesthesia with the MS technique.

Conclusion

In conclusion, despite similar patient satisfaction and recurrence rates to LF at one-year follow-up, MS might initially be preferred due to shorter hospital stay, lower complication risk, and rapid return to work and normal activities. Further prospective clinical trials are required to examine the efficiency of this technique in the long term.

Ethics

Ethics Committee Approval: The study was conducted according to the tenets of the Declaration of Helsinki. No Institutional Review Board approval was required for this study because in retrospective nature and there was no deviation from normal clinical practice.

Informed Consent: Obtained.

Peer-review: Externally and internally peer reviewed.

Authorship Contributions

Surgical and Medical Practices: B.G., E.Ö., Concept: B.G., E.Ö., Design: B.G., E.Ö., Data Collection or Processing: B.G., Analysis or Interpretation: E.Ö., Literature Search: B.G., Writing: B.G.

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