

# Surgical Treatment of Expansive Sacrococcygeal Pilonidal Sinus with the Spider Procedure

Kazım Gemici<sup>1</sup>, Sadık Şentürk<sup>2</sup>

## ABSTRACT

Many techniques have been described to treat sacrococcygeal pilonidal sinus disease in its chronic and acute forms. Appear to be the main problems associated with the closing techniques during the surgical treatment of this disease. The aim of this study, in patients with expansive sacrococcygeal pilonidal sinus (ESPS) was to analyse results of with triangular excision and the spider flap procedure. From Nov 2012 through Nov 2013, single centre a totally 46 male patients were performed the with triangular excision and spider flap procedure for surgical treatment of ESPS. Patient datas were analysed retrospective. Patients with sepsis underwent surgery after treatment with the appropriate antibiotic. In the literature, we didn't find a study made with the procedure for pilonidal sinus surgical treatment. We described a new effective repair method using the spider procedure for the excision of the pilonidal cyst. Within the scope of the study, a total of 46 male patients mean aged 26.5 (21-38) were treated with this technique. One of our patients (2.2%) developed recurrence. No flap rotation failures flap necrosis, incisional line maceration, delayed wound healing, or further complications were observed in an average of 8 month (6-11 months) follow-up period. Minimum postoperative morbidity and pain, short hospital stay and reduced time off work, satisfying esthetic outcome, and low recurrence rate make the proposed spider flap procedure an advantageous method for the treatment of ESPS.

**Key words:** Spider procedure, pilonidal sinus, triangular excision

## Yaygın Sakrokoksijial Pilonidal Sinüsün Örümcek Flep Prosedürü İle Cerrahi Tedavisi

### ÖZET

Sakrokoksijial pilonidal sinüs hastalığının akut ve kronik şeklinin tedavisi için bir çok teknik tarif edilmiştir. Hastalığın cerrahi tedavisinde temel problem kapama şekilleri ile ilgili gibi görünmektedir. Bu çalışmada yaygın sakrokoksijial pilonidal hastalığı olan kişilerde üçgen eksizyon ve örümcek flep prosedürü uygulanan hastaların sonuçlarının sunulması amaçlanmıştır. Kasım 2012 ile Kasım 2013 tarihleri arasında yaygın sakrokoksijial pilonidal sinüs hastalığı olan toplam 46 hastaya, tek merkezde üçgen eksizyon ve örümcek flep prosedürü ile cerrahi tedavi uygulandı. Hasta verileri retrospektif olarak analiz edildi. Enfeksiyon bulguları olan hastalara uygun antibiyoterapiyi takiben cerrahi uygulandı. Literatürde pilonidal sinüs tedavisinde bu cerrahi tekniğin uygulandığı bir çalışma bulunmamaktadır. Bu çalışmada pilonidal hastalığın tedavisinde yeni ve etkili bir tedavi şekli olan örümcek flep prosedürü tanımlanmıştır. Bu çalışma kapsamında yaş ortalaması 26.5 (21-38) olan toplam 46 erkek hasta bu teknik ile tedavi edildi. Sadece bir hastada (%2,2) rekürrens görüldü. Ortalama 8 aylık takip süresinde (6-11 ay) hiçbir hastada flep nekrozu, flep rotasyonunda başarısızlık, insizyon hattında maserasyon, gecikmiş yara iyileşmesi veya benzer komplikasyonlar gözlenmedi. Yaygın sakrokoksijial pilonidal sinüs tedavisinde minimal postoperatif ağrı ve morbidite, kısa hastanede kalış süresi, erken işe dönüş, iyi estetik görünüm ve düşük rekürrens oranı ile örümcek flep prosedürü alternatif bir tedavi metodudur.

**Anahtar kelimeler:** Örümcek flep, pilonidal sinüs, üçgen eksizyon

<sup>1</sup>Mevlana University Faculty of Medicine Department of General Surgery, Konya, Turkey, <sup>2</sup>Mevlana University Faculty of Medicine Department of Plastic and Reconstructive Surgery, Konya, Turkey

**Correspondence:** Kazım Gemici,  
Aksinne Mahallesi Esmetaş sokak No:16 Meram/Konya, Turkey  
Phone number: +0 90 444 42 00 Fax number: +0 90 332 320 56 30  
Cell phone number: +0 90 0 535 394 32 46  
E-mail: drkazimgemici@hotmail.com

Received: 15.03.2014, Accepted: 30.06.2014

**INTRODUCTION**

Pilonidal sinus was reported by Herbert Mayo in 1833 and first surgical technique have been described in 1880. Next many techniques have been described to treat sacrococcygeal pilonidal sinus in its chronic and acute forms (1). Recurrence of the disease, failures of flap rotation, maceration at the incisional line and insufficient or delayed wound healing of flap corners, which can be associated with ischemia, appear to be the main problems associated with the closing techniques during the surgical treatment of this disease. Sacrococcygeal pilonidal sinus disease is a chronic inflammatory condition (2). Its cause is uncertain but relates to the invagination of loose hair into the natal cleft. This hair leads to a foreign body reaction resulting in inflammation and abscess formation (3,4). Many surgical treatments have been described for sacrococcygeal pilonidal sinus, including flap surgery (5-7). An ideal operation for this disorder should effectively eradicate the disease, minimize the risk of recurrence, and carry low rate of morbidity and disability. The management of the resulting defect on the tense sacral region appears to be the most important problem, similar to postoperative wound healing (8,9). The aim of this study was to increase the quality of life in patients with triangular excision and the spider flap procedure.

**MATERIALS AND METHODS**

The study was conducted in the day-case surgery department of Mevlana University Hospital in Konya, Turkey, from Nov 2012 through Nov 2013. A total of 46 male patients with ESPS were treated by triangular excision and the spider flap procedure. In the study has been complied with the ethical guidelines of Mevlana University. All the patients were healthy adults without any major coexisting diseases and no previous history of surgery. The same surgical group performed the procedures on all pa-

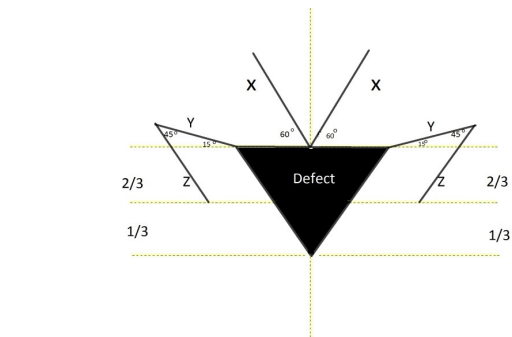


Figure 2. Technical drawing of the spider procedure

tients under spinal anesthesia. Patients were placed in a prone, jackknife position on the operating table with legs slightly abducted and the buttocks strapped apart using adhesive tape from the buttocks to the table. The surgical field was shaved and cleaned with antiseptic povidone-iodine solution. As soon as the operation started, 1 gr of sulbactam-ampicillin was administered intravenously. We planned to close the defect with the spider technique. To this end, the pilonidal sinus was excised and defect closure was accomplished with the spider procedure (Figure 1 a,b,c). The spider procedure basically includes the use of a modified 5-flap Z-plasty technique to obtain maximum tissue relaxation for tension-free closure of skin defects. In this procedure, the defect is surgically converted to an either equilateral or isosceles triangle, and is closed with 5 flaps harvested from the neighboring skin in a double-opposing Z-plasty manner (Figure 2) (10).

No postoperative restrictions on resting position or patient activity were required. The dressing was changed and the patients were encouraged to walk on the second postoperative day. Postoperative view at 6 months after surgery ( Figure 3).



Figure 1. a. The spider procedure drawing b. The view after excision c. The view the end of the operation



Figure 3. The view of the sixth month

**Table 1. Complications and results of 46 cases**

Complications and Results	n (%)
Infection	0
Seroma	0
Wound disruption	1 (2.1)
Recurrence	1 (2.2)
Hospital stay (days)	1.2 (1-2)*
Return to activity (days)	9.7 (7-15)*
Follow-up (months)	8 (6-11)*

\*Mean (range).

## RESULTS

A total of 46 male patients mean aged 26.5 (21-38) with expansive pilonidal sinus disease were treated by triangular excision and the spider flap procedure. Complications and results are summarized in Table 1. No major anesthetic and surgical complications occurred. The dressing was changed after the second postoperative day. Skin sutures were removed on the 10th to 14th postoperative day. No patient had a wound infection, urinary retention and seroma. A patient (2.1 percent) had wound detachment of the incision. The patient was treated with local wound care. Patients were discharged on the first to second (mean, 2,1) postoperative day. They returned to full activity on the 7th to 15th (mean, 9,7) postoperative days. A comparison of our results with literature is summarized in Table 2.

A wound disruption recovered with dressing as secondary healing. In postoperative term, patients were followed up for a mean of 8 (6-11) months. One of our patients (2.2%) developed recurrence. The recurrence occurred at fifth months and at the lower end the midline suture.

The spider flap procedure is a tension-free surgical technique, is an ideal method to close a particularly large defects. Minimum postoperative morbidity and pain, short hospital stay and reduced time off work, satisfying esthetic outcome, and low recurrence rate make the proposed spider flap procedure an advantageous method for the treatment of ESPS.

## DISCUSSION

Although various methods are used to surgically treat sacrococcygeal pilonidal disease, the ideal treatment method has not yet been defined. The treatment goals for pilonidal disease are cure with a low recurrence rate while causing minimal complications and inconvenience for the patient including minimizing hospital stays and return to work or regular daily activities quickly and the surgical procedure should also be simple and inexpensive (11, 12). Conservative treatment modalities including frequent hair removal, injection of sclerosing chemical agents such as phenol, and electrocauterization are associated with high disease recurrence rate (13). Excision and direct wound closure are usually associated with extensive tension and pain, and a long period of postoperative care. Moreover, high recurrence rates of up to 30 percent have also been reported (14-18).

Marsupialization is defined as suturing the skin edges, whether to the postsacral fascia or to the subcutaneous tissue after excision. During the marsupialization procedure, the sinus floor is left undestroyed, and the boundary of the fibrous floor of the sinus cavity is used to suture the skin edges. This prevents suture tension, and because the fibrous tissue does not contain free nerve endings, it may result in less pain, eventually leading to quicker return to work (12,18). Many surgical techniques, with different recurrence rates, have been reported including excision and Z-plasty, excision and Wplasty, V-Y advancement flaps and the Limberg flap (19-21). The Limberg transposition flap for pilonidal disease has been reported to have a lower recurrence rate, shorter disability period, and shorter hospitalization time (22-25)

The Limberg flap, however, is not reliable for the reconstruction of large sized defects of the sacrococcygeal region occurring after extensive excision of pilonidal sinus disease. A single Limberg flap does not suffice the repair of big defects, while double Limberg flap leads to an increase in tension on the suture line in the donor area. The area where the tension is the greatest is the mid-line in

**Table 2. Comparison of our results and literature (15,24,25)**

Technique	Infection %	Wound disruption %	Recurrence %
Primary closure	12.4	8.9	9.4
Modified Karydakias flap	3	0	2
Modified limberg flap	5	15	3
Limberg flap	0	4.1	4.8
Our study	0	2.1	2.3

V-Y advancement flaps used in the repair of big defects. This situation brings about problems in wound healing and increases recurrence rates. In the spider procedure, however, the tension in the mid-line has been minimized. Therefore, wound healing becomes better and recurrence rate is minimized too. Wound tenderness after sacrococcygeal pilonidal disease surgery is an important issue brought up by patients. Although the spider flap procedure is a tension-free surgical technique the patients usually complain about pain, particularly in the sitting position. Recurrence is not rare after pilonidal sinus surgery, and many patients require multiple operations. The recurrences that occur during the first year after surgery are usually associated with wound infections and incomplete excision of pilonidal disease (26,27). In our study we had one (2.2%) recurrence during the follow-up period of 8 (6-11) months. The recurrence occurred at fifth months.

In conclusion, minimum postoperative morbidity and pain, short hospital stay and reduced time off work, satisfying aesthetic outcome, and low disease recurrence rate make the proposed spider flap procedure an advantageous method for the treatment of ESPS, especially in patients with recurrent disease and the reconstruction of large sized defects after extensive excision.

#### Conflict of interest

I certify that there is no actual or potential conflict of interest in relation to this article.

#### REFERENCES

1. Chintapatla S, Safarani N, Kumar S, Haboubi N. Sacrococcygeal pilonidal sinus: historical review, pathological insight and surgical options. *Tech Coloproctol* 2003;7:3-8.
2. Hull TL, Wu J. Pilonidal disease. *Surg Clin North Am* 2002;82:1169-85.
3. Phillips PJ. Web space sinus in a shearer. *Med J Aust* 1966;2:1152-3.
4. Mohanna PN, Al-Sam SZ, Flemming AF. Subungual pilonidal sinus of the hand in a dog groomer. *Br J Plast Surg* 2001;54:176-8.
5. Yilmaz S, Kirimlioglu V, Katz D. Role of simple V-Y advancement flap in the treatment of complicated pilonidal sinus. *Eur J Surg* 2000;166: 269.
6. Erdem E, Sungurtekin U, Nessar M. Are postoperative drains necessary with the Limberg flap for treatment of pilonidal sinus? *Dis Colon Rectum* 1998; 41:1427-31.
7. Quinodoz PD, Chilcott M, Grolleau JL, Chavoïn JP, Costagliola M. Surgical treatment of sacrococcygeal pilonidal sinus disease by excision and skin flaps: the Toulouse experience. *Eur J Surg* 1999;165:1061-5.
8. Sondena K, Andersen E, Soreide JA. Morbidity and short term results in a randomised trial of open compared with closed treatment of chronic pilonidal sinus. *Eur J Surg* 1992;158:351-5.
9. Bascom J, Bascom T. Failed pilonidal surgery: new paradigm and new operation leading to cures. *Arch Surg* 2002;137:1146-51.
10. Mutaf M, Temel M, Günel E. The spider procedure: a new Z-plasty-based local flap procedure. *Ann Plast Surg*. 2012 Nov;69(5):555-9.
11. Akinci OF, Coskun A, Uzunköy A. Simple and effective surgical treatment of pilonidal sinus: asymmetric excision and primary closure using suction drain and subcuticular skin closure. *Dis Colon Rectum* 2000;43:701-7.
12. Karakayali F, Karagulle E, Karabulut Z, Oksuz E, Moray G, Haberal M. Unroofing and marsupialization vs. rhomboid excision and Limberg flap in pilonidal disease: a prospective, randomized, clinical trial. *Dis Colon Rectum* 2009 ;52(3):496-502.
13. Hodgson WJ, Greenstein RJ. A comparative study between Z-plasty and incision and drainage or excision with marsupialization for pilonidal sinuses. *Surg Gynecol Obstet* 1981;153:842-4.
14. Notaras MJ. A review of three popular methods of treatment of postanal (pilonidal) sinus disease. *Br J Surg* 1970; 57: 886-90.
15. Petersen S, Koch R, Stelzner S, Wendlandt TP, Ludwig K. Primary closure techniques in chronic pilonidal sinus: a survey of the results of different surgical approaches. *Dis Colon Rectum* 2002;45:1458-67.
16. Sondena K, Nesvik I, Andersen E, Soreide JA. Recurrent pilonidal sinus after excision with closed or open treatment: final result of a randomised trial. *Eur J Surg* 1996; 162: 237-40.
17. Spivak H, Brooks VL, Nussbaum M, Friedman I. Treatment of chronic pilonidal disease. *Dis Colon Rectum* 1996; 39: 1136-9.
18. Lahooti M, Taheri PA, Nezami BG, Assa S. Sacrococcygeal pilonidal sinus treated by a new fascio-cutaneous flap. *Dis Colon Rectum* 2008; 51(5): 588-92
19. Roth RF, Moorman WL. Treatment of pilonidal sinus and cyst by conservative excision and W-plasty closure. *Plast Reconstr Surg* 1977; 60:412-5.
20. Schoeller T, Wechselberger G, Otto A, Papp C. Definite surgical treatment of complicated recurrent pilonidal disease with a modified fasciocutaneous V-Y advancement flap. *Surgery* 1997;121:258-63.
21. Manterola C, Barroso M, Araya JC, Fonseca L. Pilonidal disease: 25 cases treated by the Dufourmentel technique. *Dis Colon Rectum* 1991; 34:649-52.
22. Cubukcu A, Gonullu NN, Paksoy M, Alponat A, Kuru M, Ozbay O. The role of obesity on the recurrence of piloni-

- dal sinus disease in patients, who were treated by excision and Limberg flap transposition. *Int J Colorectal Dis* 2000; 15:173-5.
23. Dylek ON, Bekereciodlu M. Role of simple V-Y advancement flap in the treatment of complicated pilonidal sinus. *Eur J Surg* 1998;164(12):961-4.
24. Daphan C, Tekelioglu MH, Sayilgan C. Limberg flap repair for pilonidal sinus Disease. *Dis Colon Rectum* 2004; 47: 233-7.
25. Bessa SS. Comparison of short-term results between the modified karydakias flap and the modified limbergf in the management of pilonidal sinus disease: A randomized controlled study. *Dis Colon Rectum* 2013; 56: 491-8
26. Allen-Mersh TG. Pilonidal sinus: finding the right track for treatment. *Br J Surg* 1990;77:123-32
27. Kronborg O, Christensen K, Zimmermann-Nielsen C. Chronic pilonidal disease: a randomized trial with a complete 3-year follow-up. *Br J Surg* 1985;72:303-54.