

ŁUKASZEWSKA, Ewa, SAJKIEWICZ, Iłona, MIGA-ORCZYKOWSKA, Nadia, JASIUK, Iłona, LEMIESZEK, Paulina, WÓJTOWICZ, Justyna, RUDNICKA, Katarzyna, PUSTELNIAK, Martyna, KRUKAR, Katarzyna and CHROŚCIŃSKI, Kamil. Overview of Pilonidal Cyst Treatment Methods - Review Paper. Journal of Education, Health and Sport. 2024;68:55191. eISSN 2391-8306.

<https://dx.doi.org/10.12775/JEHS.2024.68.55191>

<https://apcz.umk.pl/JEHS/article/view/55191>

The journal has had 40 points in Minister of Science and Higher Education of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of 05.01.2024 No. 32318. Has a Journal's Unique Identifier: 201159. Scientific disciplines assigned: Physical culture sciences (Field of medical and health sciences); Health Sciences (Field of medical and health sciences). Punkty Ministerialne 40 punktów. Załącznik do komunikatu Ministra Nauki i Szkolnictwa Wyższego z dnia 05.01.2024 Lp. 32318. Posiada Unikatowy Identyfikator Czasopisma: 201159. Przypisane dyscypliny naukowe: Nauki o kulturze fizycznej (Dziedzina nauk medycznych i nauk o zdrowiu); Nauki o zdrowiu (Dziedzina nauk medycznych i nauk o zdrowiu). © The Authors 2024;

This article is published with open access at Licensee Open Journal Systems of Nicolaus Copernicus University in Torun, Poland

Open Access. This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author (s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non commercial license Share alike.

(<http://creativecommons.org/licenses/by-nc-sa/4.0/>) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited.

The authors declare that there is no conflict of interests regarding the publication of this paper.

Received: 15.08.2024. Revised: 23.09.2024. Accepted: 23.09.2024. Published: 24.09.2024.

## Overview of Pilonidal Cyst Treatment Methods - Review Paper

### Authors:

#### **Ewa Łukaszewska**

VOXEL NZOZ MCD, Paderewskiego 5, 37-100 Łańcut, Poland

<https://orcid.org/0009-0000-6065-7213>,

[lukaszewska.ewapaulina@gmail.com](mailto:lukaszewska.ewapaulina@gmail.com)

#### **Iłona Sajkiewicz**

Stefan Wyszyński Provincial Specialist Hospital in Lublin, Aleja

Kraśnicka 100, 20-718 Lublin, Poland

<https://orcid.org/0009-0007-5954-3594>,

[inasajka@gmail.com](mailto:inasajka@gmail.com)

#### **Nadia Miga-Orczykowska**

Stefan Wyszyński Provincial Specialist Hospital in Lublin, Aleja Kraśnicka 100, 20-718

Lublin, Poland

<https://orcid.org/0000-0002-0551-6159>,

[nadmig98@gmail.com](mailto:nadmig98@gmail.com)

#### **Paulina Lemieszek**

Stefan Wyszyński Provincial Specialist Hospital in Lublin, Aleja Kraśnicka 100, 20-718

Lublin, Poland

<https://orcid.org/0009-0001-6648-7283>,

[paulina.lemieszek13@gmail.com](mailto:paulina.lemieszek13@gmail.com)

**Ilona Jasiuk**

Independent Public Clinical Hospital No. 1 in Lublin, Stanisława Staszica 16, 20-400 Lublin, Poland

<https://orcid.org/0009-0009-8544-3276>,

[ilona.jasiuk@gmail.com](mailto:ilona.jasiuk@gmail.com)

**Justyna Wójtowicz**

Stefan Wyszyński Provincial Specialist Hospital in Lublin, Aleja Krasnicka 100, 20-718 Lublin, Poland

<https://orcid.org/0009-0006-6079-9637>,

[wojtowicz.justyna@gmail.com](mailto:wojtowicz.justyna@gmail.com)

**Katarzyna Rudnicka**

Stefan Wyszyński Provincial Specialist Hospital in Lublin, Aleja Krasnicka 100, 20-718 Lublin, Poland

<https://orcid.org/0009-0005-6815-6276>,

[katarzyna.rudnicka95@gmail.com](mailto:katarzyna.rudnicka95@gmail.com)

**Martyna Pustelniak**

Provincial Combined Hospital in Kielce, Grunwaldzka 45, 25-736 Kielce, Poland

<https://orcid.org/0009-0000-5606-0385>,

[martyna.pustelniak@onet.pl](mailto:martyna.pustelniak@onet.pl)

**Katarzyna Krukar**

Provincial Combined Hospital in Kielce, Grunwaldzka 45, 25-736 Kielce, Poland

<https://orcid.org/0009-0001-5544-8027>,

[kasiakrukar3@interia.pl](mailto:kasiakrukar3@interia.pl)

**Kamil Chrościński**

1st Clinic of Psychiatry, Psychotherapy and Early Intervention, University Teaching Hospital No. 1 Lublin, Stanisława Staszica 16, 20-400 Lublin, Poland

<https://orcid.org/0009-0000-0468-7901>,

[kamilchr@onet.pl](mailto:kamilchr@onet.pl)

## **Abstract**

### **Introduction and purpose**

A pilonidal cyst also known as a pilonidal sinus, is an inflammatory condition that occurs in the intergluteal region, which can lead to serious infections. It most commonly affects young men, with risk factors including the presence of hair in this area, excessive sweating, obesity, and poor hygiene. Symptoms include a lump, pain, and purulent discharge from openings in the skin. Diagnosis involves taking a medical history, a physical examination, and often an ultrasound. The aim of this paper is to present and compare the available methods for treating pilonidal cysts.

### **Materials and methods**

Literature available in PubMed databases were reviewed using the following keywords: ‘Pilonidal cyst’, ‘Hair cyst’, ‘Abscess’, ‘Treatment of pilonidal cyst’, ‘Bascom II method’, ‘Limberg flap’, ‘Suchorski technique’, ‘V-Y or Z skin flap reconstruction’, ‘the Karadakis’

### **Results**

The available treatment methods can be divided into conservative and invasive approaches. Conservative methods include hair removal and improved hygiene. Among the surgical methods, there are traditional excision techniques and modern methods such as excision using the Bascom II method, Limberg flap, Suchorski technique, or V-Y or Z skin flap reconstruction. The Karadakis method, which involves shifting a skin flap, is particularly effective for obese patients.

### **Conclusion**

Treatment of pilonidal cysts depends on the stage and symptoms. Abscesses require urgent surgical intervention, while asymptomatic cysts can be treated conservatively or surgically.

**Keywords :** ‘Pilonidal cyst’, ‘Hair cyst’, ‘Abscess’, ‘Treatment of pilonidal cyst’, ‘Bascom II method’, ‘Limberg flap’, ‘Suchorski technique’, ‘V-Y or Z skin flap reconstruction’, ‘the Karadakis’

## **Introduction**

In the literature, synonymous terms for hair cyst include hair fistula, hair sinus, pilonidal cyst, pilonidal fistula, pilonidal sinus, subcutaneous cyst, and coccygeal cyst (1,2). Noteworthy is the original term "jeep disease," which stems from the increased incidence of hair cysts among soldiers riding in jeeps during World War II. Some data suggest that as many as 79,000 American soldiers with hair cysts required hospitalization (5).

## **Ethiopatogenesis**

The initial symptom of a hair sinus may be an acute abscess or a chronic sinus with periodic discharge. An untreated abscess can lead to cellulitis and severe septic complications. Symptoms are localized in the intergluteal cleft area and primarily occur in young individuals aged 15-30 years, predominantly in men. The main risk factor is the presence of hair in the intergluteal cleft. Pilonidal cyst is an acquired condition resulting from infection of hair follicles in the sacrococcygeal area (3). Factors that promote cyst development include excessive sweating, obesity, poor hygiene, and excessive hair growth. While not life-threatening, it significantly impairs quality of life and accounts for about 10% of suppurative anorectal diseases (4).

## **Clinical Symptoms**

Diagnosis is based on patient history, physical examination, and histopathological examination if the cyst is surgically removed. The symptom of a pilonidal cyst is a lump in the upper part of the intergluteal cleft, causing pain, and sometimes it presents as inflammation of the subcutaneous tissue. Around the gluteal cleft, about 5 cm above the anus, one or more openings may be visible, discharging purulent secretion, occasionally with protruding tufts of hair. Removal of these hairs with tweezers may alleviate inflammation. Sometimes, openings are visible without inflammation. The cyst's channel may connect to an abscess cavity or additional channels. Secondary openings appear as raised granulation tissue from which serous-purulent content drains. Most channels run cephalad, but some extend towards the anus and are difficult to distinguish from anal fistulas (5,6). Ultrasound is often

used to verify the change, providing a clear image of the pilonidal cyst as a hypoechoic lesion containing thin hyperechoic strands corresponding to hair (7). Differential diagnosis typically includes anal fistula, carbuncle, Crohn's disease, and apocrine gland inflammation (8).

## **Treatment**

The choice of treatment depends on several factors, including the disease phase, patient symptoms, the doctor's experience, and the availability of appropriate equipment. Pilonidal cysts presenting as abscesses always require prompt surgical intervention, while asymptomatic hair cysts do not necessarily require treatment but may be managed conservatively or surgically for cosmetic reasons.

- **Conservative management**

For asymptomatic or mildly symptomatic hair cysts, or if the patient refuses surgery, conservative management is employed. This involves hair removal from sinus openings, maintaining hygiene, and hair removal in the intergluteal area, preferably with a permanent method like laser hair removal. Local treatments such as ozone therapy can also be used (9).

- Non-surgical Treatment

- Debridement

The first type of therapy is debridement, which involves widening the sinus opening and thoroughly removing it. This technique is recommended for uncomplicated pilonidal cysts before abscess formation, especially in women (7,10).

- Phenol Injection

This method is becoming less common due to the toxicity of the substance used. The cyst is cleansed through the sinus channel, with hair and dead tissue removed, then a 40% or 80% phenol solution is injected into the cyst. Care must be taken to protect the surrounding skin from phenol. Most patients stay in the hospital for one day due to local inflammation, with complete wound healing occurring within 30-60 days and a cure rate of about 70% (11).

Less commonly used therapies include cryotherapy and ozone therapy, which inhibit the growth of anaerobic bacteria typically thriving in the intergluteal cleft. Ultimately, surgical removal of the cyst may be necessary.

- Surgical Treatment

In surgical procedures, we distinguish emergency situations during which an incision and drainage of abscesses are performed.

Among the planned surgical methods, the following can be distinguished:

- Classic methods (excision with healing by secondary intention or stitching the wound along the midline)
- Advanced methods (excision with defect reconstruction using a rotated skin flap or skin grafting outside the midline) (12).

The effectiveness of classic excision, measured by the number of recurrences, is considered fairly high. However, the healing time for a wound left to heal by secondary intention can take up to 3 months. Due to the long recovery period, surgeons are increasingly using advanced surgical techniques that accelerate the healing process.

- Incision of a Pilonidal Cyst

In some patients, an incision of the lesion is performed, along with widening of the pilonidal sinus opening and curettage of the cyst channel. Proper execution of this procedure by an experienced surgeon can cure up to 80% of patients (13).

Fibrous tissue of the channels is not excised but rather sutured to the wound edges, which makes the wound smaller and shallower than after extensive excision. This procedure can be performed in an outpatient setting. Healing typically takes 6 weeks, and recurrences are rare (14).

- Conservative Excision with Open Healing

This treatment method involves the complete removal of the abscess and associated fistulas. It aims to minimize the risk of disease recurrence. Conservative excision can be performed through a lateral incision relative to the midline. After the removal of the cyst and fistulas, the external openings of the fistulas are excised and left to heal naturally. The lateral incision is sutured with primary stitches (15,16). The effectiveness of this method is 85%, and its advantages include a small wound, the possibility of performing the procedure in an

outpatient setting, and no need for frequent dressing changes. This method is preferred in treating chronic, uncomplicated cysts and certain recurrent pilonidal cysts (17,18).

➤ Bascom II Method

The ‘‘Cleft Lift’’ method, also known as the ‘‘Bascom II method’’ after its creator, is a type of conservative surgery used for small cysts. During the procedure, a parallel incision is made along one side of the cyst, and an arc-shaped incision is made around the cyst on the other side. The key is to shape the incision so that both ends of the wound are located off the midline, on the same side of the gluteal cleft. After healing, the wound shifts away from the midline, leading to a flattening of the area. This reduces the risk of hair penetrating open skin pores in the region, preventing recurrence. The altered tissue is then excised, full-thickness skin flaps are mobilized, and the wound is sutured layer by layer. Fascia, subcutaneous, and skin sutures are applied, gradually reducing tension across layers. The healing process takes around 3 weeks, with a recurrence rate of less than 8% (19,20).

➤ Suchorski Excision Method

The Suchorski method, also known as ‘‘oblique excision’’, involves making an incision in the shape of an elongated ‘‘S’’. It is particularly recommended for patients with a pilonidal cyst that is not very extensive but where the external opening of a cutaneous fistula is located a considerable distance from the original cyst location. This opening is usually situated in the sagittal plane, either toward the head or toward the anus. If the defect is directed toward the anus, rectoscopy and transrectal ultrasound should be performed to rule out the possibility of an anal fistula. The S-shaped incision allows for the removal of both the cyst and the distant opening. The middle part of the incision should be made asymmetrically in relation to the midline, which after closing the wound, shifts it away from the midline. According to the latest data, the recurrence rate after oblique excision is about 1.5%, and the complication rate does not exceed 9% (21).

➤ Limberg Flap Procedure

This is a type of procedure known as ‘‘rhomboid flap excision of the cyst’’, an effective method for treating recurrent or extensive cysts in the transverse plane with associated cutaneous fistulas. The rhomboid excision removes the cyst along with its lateral openings,

even if it extends to both buttocks. The resulting defect is covered with a skin graft of a similar shape and size, shifted from a nearby area. The healing time for this surgical method is up to 4 weeks (22,23). Compared to excision with simple wound closure, it is associated with a lower risk of cyst recurrence, fewer postoperative complications, less pain on the first day after surgery, a shorter recovery time, and a shorter hospital stay, although the surgery itself takes longer (24,25).

➤ V-Y or Z Skin Flap Reconstruction

This surgical method belongs to the radical treatment options with a low risk of recurrence. It is particularly recommended for patients with recurrent cysts, especially after several unsuccessful surgeries. During the procedure, a large incision is made, followed by the shifting of a skin flap and tension-free wound closure. However, up to 90% of patients are dissatisfied with the cosmetic result due to the extent of the incision (26,27).

➤ Karadakis Method

This procedure is relatively uncommon due to its complex surgical technique. In the ‘‘Karadakis method’’, a skin flap is moved after being released by a parallel, asymmetrical incision along one side of the gluteal cleft. The shape and direction of the incision depend on the area of skin and subcutaneous tissue affected by the disease. The greater thickness of the subcutaneous tissue in the region of the shifted flap helps fill the defect left after excision, leading to a flattening of the gluteal cleft (28,29). Effective shifting and fixation of the flap using the Karadakis method is easier in patients with abundant subcutaneous tissue in this area, making it particularly recommended for obese individuals. Treatment outcomes show a low recurrence rate, ranging from 4% to 8% (30).

## **Conclusions**

The choice of treatment for a hair cyst depends on the disease phase, patient symptoms, surgeon's experience, and equipment availability. Abscesses require immediate surgical intervention, while asymptomatic cysts can be treated conservatively or surgically, mainly for cosmetic reasons. Non-surgical methods include debridement and phenol injection, though



they are less popular. Surgical treatment is divided into classical and advanced methods, with modern techniques offering shorter healing times and lower recurrence rates. Techniques such as Bascom II excision, Suchorski's, Limberg's, and V-Y or Z skin plasty are used depending on the extent of the cyst and individual patient needs, with the Karadakis method recommended for those with abundant subcutaneous tissue.

## **Disclosure**

### **Authors' contributions**

Conceptualization:

Ewa Łukaszewska, Ilona Sajkiewicz

Methodology:

Paulina Lemieszek, Ilona Jasiuk

Software:

Ilona Jasiuk, Martyna Pustelniak, Katarzyna Krukar

Check:

Katarzyna Krukar, Nadia Miga-Orczykowska;

Formal Analysis:

Ewa Łukaszewska,

Investigation:

Martyna Pustelniak, Ewa Łukaszewska, Kamil Chrościński

Resources:

Justyna Wójtowicz, Martyna Pustelniak,

Data Curation:

Katarzyna Rudnicka

Writing-rough preparation:

Nadia Miga-Orczykowska, Justyna Wójtowicz, Katarzyna Rudnicka

Writing-review and editing:

Ilona Sajkiewicz, Paulina Lemieszek, Ilona Jasiuk

Visualization:

Justyna Wójtowicz, Katarzyna Krukar, Kamil Chrościński

Project Administration:

Ilona Sajkiewicz, Nadia Miga-Orczykowska

Supervision:

Ilona Sajkiewicz, Paulina Lemieszek.

*All authors have read and agreed with the published version of the manuscript.*

### **Funding Statement**

The study did not receive special funding.

### **Institutional Review Board Statement**

Not applicable.

### **Informed Consent Statement**

Not applicable.

### **Data Availability Statement**

Not applicable.

### **Acknowledgments**

Not applicable.

### **Conflict of Interest Statement**

The authors of the paper report no conflicts of interest.

### **References**

1. Bielecki K, Kołodziejczak M. Terminology in Proctology. Basic Concepts and Definitions. Warsaw: Medical Standards in Practice, 2012.
2. Dżiki A, Sygut A. Pilonidal Cyst. Cyst in the Sacrococcygeal Area. In: Proctology. Bielecki K, Dżiki A (eds.). Warsaw: PZWL, 2000.

3. da Silva J.H.: Pilonidal cyst: cause and treatment. *Dis Colon Rectum.*, 2000; 43: 1146-1156.
4. Dr. hab. Małgorzata Kołodziejczak: Etiopathogenesis and Treatment of Pilonidal Cyst 2015.
5. Buie LA, Curtis PD. Pilonidal disease. *Surg Clin North Am* 1952;32:1247-59
6. Kołodziejczak M, Sudoł-Szopińska I, Wilczyńska A, et al. Utility of Transperineal and Anal Ultrasonography in the Diagnosis of Hidradenitis Suppurativa and Its Differentiation from a Rectal Fistula. *Advances in Hygiene and Experimental Medicine* 2012.
7. Cenk Ersavas, Basak Erginel, Fatih Yanar, et al. Endoscopic pilonidal sinus treatment (EPSIT) versus sinus laser therapy (SiLaT) for sacrococcygeal pilonidal sinus.
8. Søndena K, Andersen E, Nesvik I, Søreide JA. Patient characteristics and symptoms in chronic pilonidal sinus disease. *Int J Colorectal Dis.* 1995;10(1):39-42. doi: 10.1007/BF00337585. PMID: 7745322.
9. Khawaja HT, Bryan S, Weaver PC. Treatment of natal cleft sinus: a prospective clinical and economic evaluation. *BMJ.* 1992 May 16;304(6837):1282-3. doi: 10.1136/bmj.304.6837.1282. PMID: 1606429; PMCID: PMC1881859.
10. Iesalnieks I., Deimel S., Kienle K., et al. Pit-picking surgery for pilonidal disease. *Chirurg*, 2011; 82: 927-93.
11. Noszczyk W. *Surgery, Volume 2*, PZWL, Warsaw 2009; Dutkiewicz P., Ciesielski P. Pilonidal Cyst – History, Epidemiology, and Pathophysiology. *Borgis - New Medicine*, 2015;1, 24-27.
12. 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 Nov;45(11):1458-67. doi: 10.1007/s10350-004-6451-2. PMID: 12432292.
- 13 10. V. de Parades a, D. Bouchard b, M. Janier c, A. Berger d. Pilonidal sinus disease.
14. Spivak H., Brooks V.L., Nussbaum M., Friedman I.: Treatment of chronic pilonidal disease. *Dis. Colon Rectum*, 1996; 39: 1136-1139.

15. Thompson M.R., Senapati A., Kitchen P.: Simple day-case surgery for pilonidal sinus disease. *Br. J. Surg.*, 2011; 98: 198-209
  
16. Maghsoudi H., Nezami N., Ghamari A.A.: Ambulatory treatment of chronic pilonidal sinuses with lateral incision and primary suture. *Can. J. Surg.*, 2011; 54: 78-82
  
17. P.J. Gupta, Comparative study between radiofrequency sinus excision and open excision in sacro-coccygeal pilonidal sinus disease; *Dig Surg*, 22 (2005), pp. 459-463
  
18. H.A. Mohamed, I. Kadry, S. Adly. Comparison between three therapeutic modalities for non-complicated pilonidal sinus disease; *Surgeon*, 3 (2005), pp. 73-77
  
19. Nordon IM, Senapati A, Cripps NP. A prospective randomized controlled trial of Bascom's technique versus Bascom's cleft closure for the treatment of chronic pilonidal disease. *American J Surg* 2009;197:189-92.
  
20. Tazel E, Bostanci H, Anadol AZ. Cleft lift procedure for sacrococcygeal pilonidal disease. *Dis Colon Rectum* 2009;52:135-9.
  
21. Ibrahim A. Oblique excision and primary closure of pilonidal sinus. *Trends in medical research*. 2012;7;62-7.
  
22. Muller K, Marti L, Tarantino I, et al. Prospective analysis of cosmesis morbidity and patient satisfaction following Limberg flap for the treatment of sacrococcygeal pilonidal sinus. *Dis Colon Rectum* 2011;54:847-94.
  
23. Shaihid Z, Qureshi K, Ahmed N. Rhomboid Flap in the treatment of pilonidal sinus disease. *Med Forum Monthly* 2012;23:99-103.
  
24. Akca T., Colak T., Ustunsoy B., et al. Comparison of Simple Sacrococcygeal Pilonidal Cyst Excision with Wound Closure and Wide Excision with Limberg Flap Coverage. *British Journal of Surgery*, 2005; 92: 1081-1084.
  
25. Horwood J, Hanratty D, Chandran P, Billings P. Primary closure or rhomboid excision and Limberg flap for the management of primary sacrococcygeal pilonidal disease? A meta-analysis of randomized controlled trials. *Colorectal Dis*. 2012 Feb;14(2):143-51. doi:

10.1111/j.1463-1318.2010.02473.x. PMID: 20969718.

26. Erylimal R, Okan I, Coskun A, et al. Surgical treatment of complicated pilonidal sinus with a fasciocutaneous V-Y advancement flap. *Dis Colon Rectum* 2009;52:2036-40.

27. Demiryilmaz I, Yilmaz I, Peker K, Celebi F, Cimen O, Isik A, Bicer S, Firat D. Application of fasciocutaneous V-Y advancement flap in primary and recurrent sacrococcygeal pilonidal sinus disease. *Med Sci Monit.* 2014 Jul 21;20:1263-6. doi: 10.12659/MSM.890752. PMID: 25042095; PMCID: PMC4114698.

28. Moran DC, Kavanagh DO, Adhmed I, et al. Excision and primary closure using the Karadakis flap for the treatment of pilonidal disease: outcomes from a single institution. *World J Surg* 2011;35:1803-8.

29. Anderson JH, Yip CO, Nagabhushan JS, Connelly SJ. Day-case Karydakis flap for pilonidal sinus. *Dis Colon Rectum.* 2008 Jan;51(1):134-8. doi: 10.1007/s10350-007-9150-y. Epub 2008 Jan 12. PMID: 18193323.

30. Kitchen PR. Pilonidal sinus: experience with the Karydakis flap. *Br J Surg.* 1996 Oct;83(10):1452-5. doi: 10.1002/bjs.1800831040. PMID: 8944470.