



Research paper

Semilunar excision of pilonidal sinus with advancement flap wound closure in the treatment of sacrococcygeal pilonidal disease

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ABSTRACT

Introduction: Sacrococcygeal pilonidal disease is common and had a lot of variants treatment techniques.

Aim: This study presents the results of treatment of the pilonidal sinus by the Suchorski method.

Material and methods: The study was conducted from 2010 to 2017 on 148 patients who underwent Suchorski's method of wound closure, using the displaced skin-fat flap after the crescent-like excision of the hair sinus in the sacroiliac area. We analyzed length of observation, duration of the surgery, length of hospital stay, complications healing of the surgical wound, duration of pain, number of relapses, disturbances of superficial skin and fat flap sensation, and cosmetic effect.

Results and discussion: The average follow-up time after surgery was 47 months (12–101 months). During the postoperative period, 11 (7.4%) cases reported complications related to wound healing 8 (5.4%) cases experienced limited wound dehiscence, and 1 (0.67%) case showed the wound had completely diverged. Only 2 (1.34%) patients developed a seroma.

Conclusions: The crescent-like excision of the pilonidal sinus of the sacrococcygeal region using the Suchorski's method is worth recommending, as a modern approach to treating pilonidal disease. This method offers the surgeon the ability to cut not only the small sinuses, but effect large-scale changes and improve patient outcomes.

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1. INTRODUCTION

Pilonidal disease is a chronic, inflammatory disease of the gluteal margin involving the pilonidal sinus of the sacrococcygeal region. The disease usually manifests as an abscess or cyst connected with the skin by a purulent fistula. These fistulas often have a tortuous, branched course and several external outlets in the gluteal margin or the buttocks. The etiopathogenesis of pilonidal disease has not been established. Most researchers assume that it is an acquired disease.^{1–3} The reason for this is the puncture of hair into the tissues through the skin of the buttocks.^{1,3,4} The circumstances leading to the occurrence of the hairline were widely recognized as a deep, narrow gluteal aperture, excessive hair, obesity, occupational driver, hygienic negligence, male sex.^{1,4,5}

Surgeons became more interested in surgical techniques involving total excision of the sinus and initial wound closure using a skin-fat flap acquired from a nearby area because of a better understanding of the probable mechanism leading to pilonidal disease development.

The primary goal of these surgical methods, apart from excision of the sinus, was to reduce the natal cleft and move the surgical incision laterally to the intergluteal cleft beyond the median line. As an advantage of such a procedure, a considerably smaller percentage of complications related to the process of wound healing and causative treatment were found. Additionally, the flattening of natal cleft is followed by a reduction of the suction force and intergluteal friction, which in turn prevents or substantially reduces the risk of recurrence.^{2,3,5–7}

Currently, the most frequently performed and documented operations that meet the above requirements are the Limberg flap, Karydakis procedure, and Bascom procedure.^{2,3,8} This study presents the results of surgical treatment of the pilonidal sinus using the method described in 1985 by the Polish surgeon Henryk Suchorski. This surgical treatment consists of a crescent-like excision of the gluteal margin with the closure of the wound with the dislocated skin-fat flap.⁹

2. AIM

The aim of this study is to evaluate long-term results of semilunar excision of pilonidal sinus in the treatment of sacrococcygeal pilonidal disease using Suchorski's technique.

3. MATERIAL AND METHODS

The study involved 181 patients operated on from the year 2010 to 2017 in University Hospital in Olsztyn. All patients included in the study were those where the radical excision of the sinus was performed for the first time. We contacted 151 (83.5%) and 3 (1.5%) of the patients refused to take part in the study without giving a reason. Therefore, 148 (81.8%) patients were included in the study group.

Of the patients studied, 108 (73.0%) personally arrived for the survey and 40 (27.0%) patients participated by telephone.

Both surveys (in person and via telephone) were composed of the identical 11 questions. The presence of the postoperative pain was examined at the 2nd, 4th and 6th postoperative week. The assessment of the cosmetic effect was carried out using a 10-point visual analogue scale (VAS) assuming the following criteria: very good effect (9–10 points), good (7–8 points), satisfactory (5–6 points), and bad (less than 5 points). Descriptive statistic was utilised to analyze the collected data. There were 29 (19.5%) of the patients in the study were women and 119 (80.5%) were men. The average age was 31 years (19–56 years). Most of the operations were performed under spinal anesthesia 137 (92.6%), with only 11 (7.4%) being performed under general anesthesia. Metronidazole and cefazolin were routinely used in perioperative prophylaxis.

Operating technique

While positioning the patient in a prone position, the buttocks were spread apart with 2–3 wide strips of adhesive glued to the side slats of the operating table to maximally flatten the buttock gap and visualize the anus. The surgical field was prepared by washing it three times with disinfectant, while making sure that all cavities in the gluteal crease, recesses after abscess incisions, and fistula outlets, if present, were filled with antiseptic fluid. After the skin in the sacrococcygeal area completely air-dried, a crescent-shaped incision was made while extending its apexes in the direction opposite to the protuberance convexity (a) (Figure 1A). The length of the incisions depended on the width of the intergluteal cleft incision (b). In one section the intergluteal cleft was removed, along with the pits typical for pilonidal disease, previous abscess incisions scars, openings to healed and active fistulas, and detectable pathological hardening of the sacroiliac fascia (Figure 1B). The direction of the crescent-shaped incision was dependent upon the lateralization of skin lesions.

At a later stage, by advancing in the superficial layer of thoracolumbar fascia using an electric knife, the dermal fat pad was prepared (c), preserving a maximum ratio of the base to the flap length of 1.5 to 1.0 (Figures 1A and 1C). After detailed haemostasis was performed, the prepared skin-fat flap was moved to the opposite side in the direction of the surgical incision and single absorbable 2–0 sutures were placed on the subcutaneous layer (Figure 1D). A suction drain was consistently placed above the superficial layer of thoracolumbar fascia, that led out through a separate incision of the skin in the midline slightly above the gluteal margin (Figure 1E). The skin was stitched with a single vertical mattress suture (Figure 1F). The drain was then removed 2–4 days after the procedure, once the daily secretions were below 30 mL.

4. RESULTS

The average time of the surgery was 55 minutes (30–110 minutes). The average length of the hospital stay after the surgery was 4.16 days (2–11 days). In the postoperative period, 11 (7.4%) complications related to wound healing were reported. In 8 (5.4%) patients there were limited dehiscence of the sur-

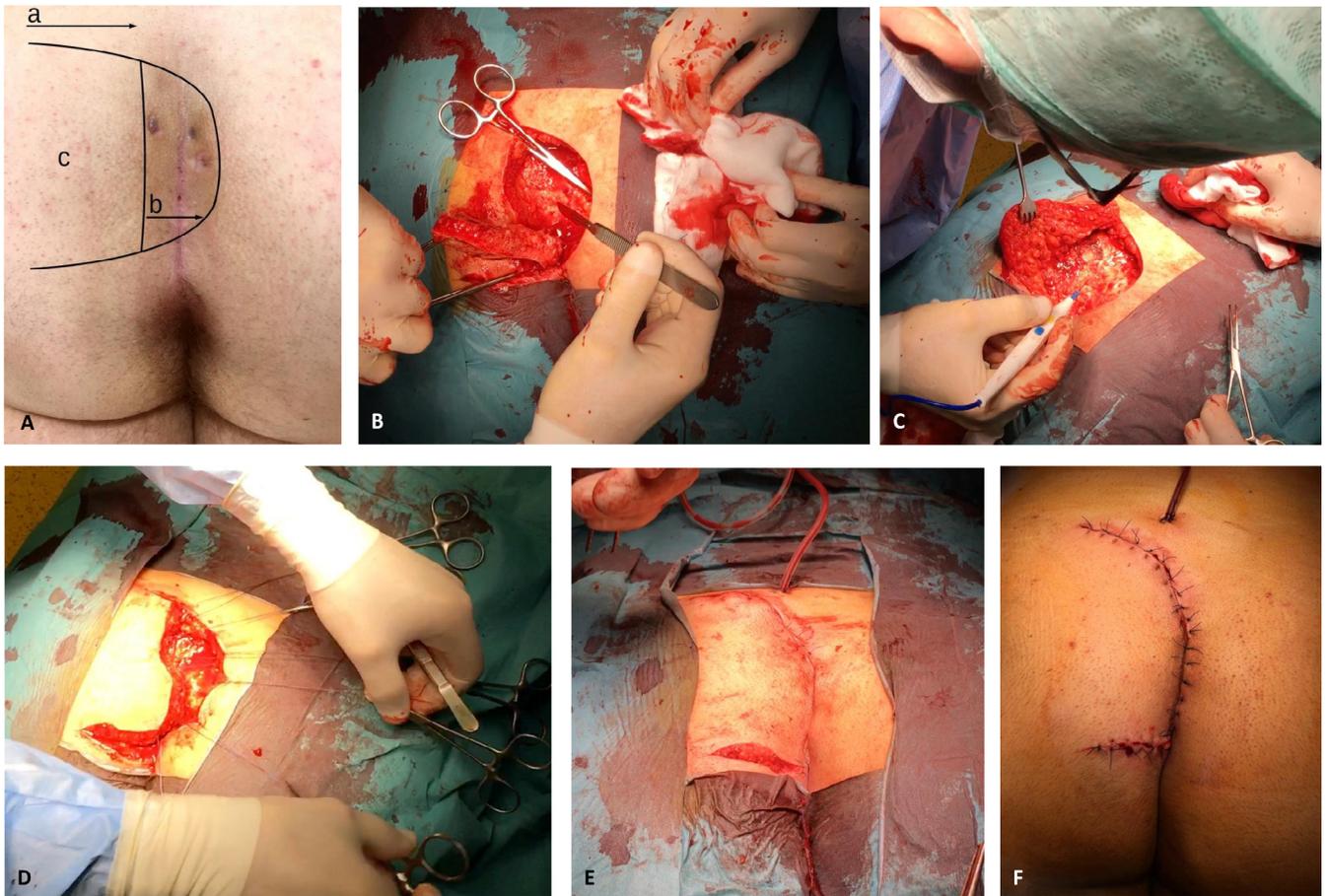


Figure 1. Prepared operating field (A). Crescent-shaped incision (B). Preparation of the dermal fat pad (C). Skin-fat flap was moved to the opposite side (D). A suction drain was always placed in the midline above the gluteal margin (E). The skin has been stitched with single vertical mattress sutures (F).

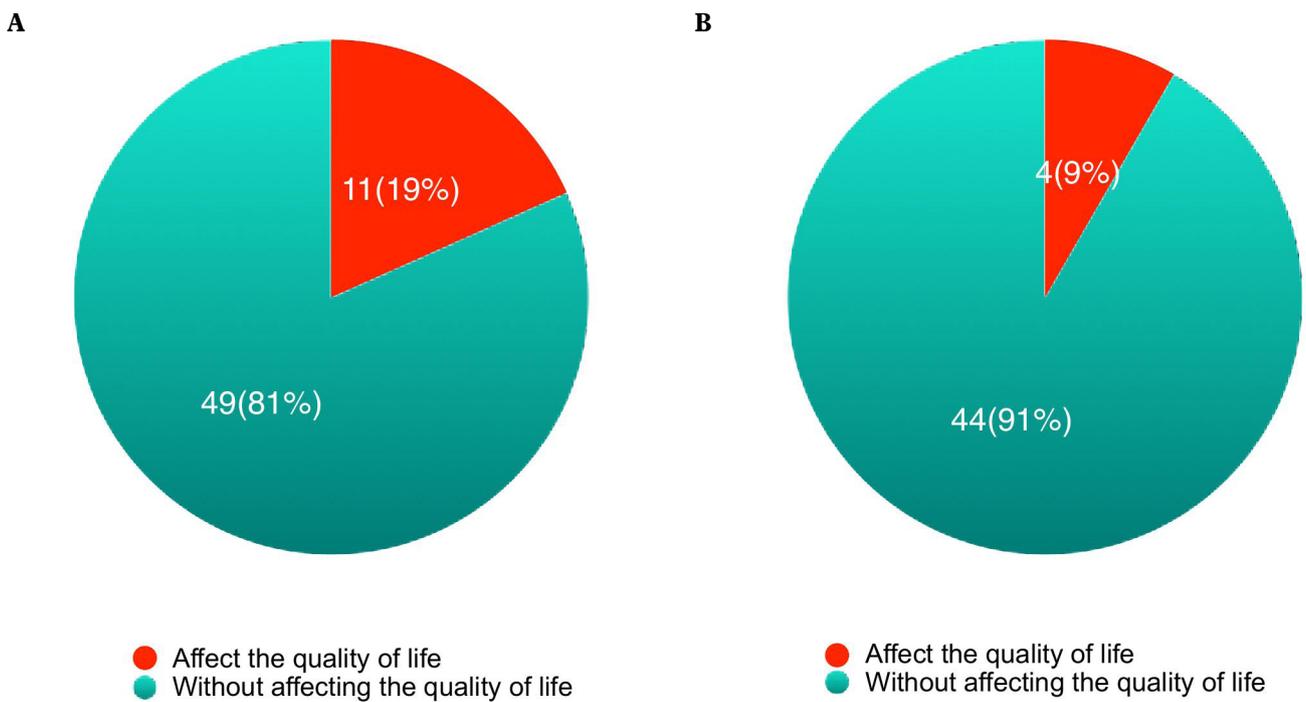


Figure 2. The influence of sensory disorders on the quality of life of patients: permanent feeling disorders, $n = 60$ (A); transient sensory disorder, $n = 48$ (B).

gical wound that always affected the area above the supraanal part of the buttocks, and in 1 (0.6%) patient, the wound dispersed completely. In 2 (1.3%) patients a seroma formed: 1 patient case was resolved by one puncture, and the 1 required short-term suction drainage. Post-operative pain continued in 136 (91.9%) patients up to 30 days. In 5 (3.4%) patients post-operative pain persisted up to 3 months, and in 7 (4.7%) patients over 3 months. Return to normal daily activity occurred in 16 (10.8%) patients under 2 weeks after surgery; 111 (75.0%) patients between 2–4 weeks; 9 (6.1%) patients between 4–6 weeks; and 12 (8.1%) patients returned to normal daily activity in over 6 weeks.

The average follow-up time was 47 months (12–101 months) from surgery. During the follow-up period, disease recurrence was found in 5 (3.4%) of the patients. In the studied group of 148 patients, superficial sensory disturbances in the peripheral part of the sliding skin-fat flap were found in 108 (73.0%). In 48 (32.4%) patients, the sensory disturbances were transient, and in 60 (40.5%) patients, the sensory disturbances were permanent, with 31 (20.9%) cases of hypoesthesia and in 29 (19.6%) cases complete desensitization. The impact of sensory disturbances on the patients' quality of life is presented in Figure 2A and 2B. The results of the VAS are shown in Figure 3.

When the patients were asked whether they would recommend this surgical method to a family member or a friend that also experienced pilonidal disease, 146 (98.6%) respondents answered 'yes' and 2 (1.4%) answered 'no.'

5. DISCUSSION

Until recently, procedures performed by many surgeons involved the complete excision of the pilonidal sinus, leaving the surgical wound for healing by granulation or its primary

stitching in the midline, often results in: an extended healing time of up to several months; a high rate of infections in the surgical area; and an unfavorable cosmetic effect.^{10–12} In addition, in the case of primary wound stitching, the number of relapses is particularly high.^{10,12–14} These negative factors prompted the search for other methods of surgical treatment of the pilonidal sinus. This search coincided with Bascom's presenting in 1980 a very probable theory that would bring us closer to explaining the etiology of pilonidal disease.²

The basis for a new approach to surgical treatment of the pilonidal sinus was the initial closure of the surgical wound using the skin-fat flap from the proximity with simultaneous displacement of the postoperative scar beyond the midline of the body and the natal cleft smoothing. These criteria are met by the method of pilonidal disease treatment presented in our study, proposed in 1985 by Henryk Suchorski and applied until present day in our Clinic.

This study analyzed a fairly large group of 148 patients with a relatively long 47-month mean follow-up period. This is particularly important when examining the rate of relapse. In our study, this percentage of relapse was 3.4% and is comparable to those of other authors in current research studies.^{6,13,14} A comparison of the percentage of relapses with a long period of observation, in the opinion of the authors of this study, is an important argument in favor of the presented method of treatment of the pilonidal sinus of the sacrococcygeal region. The authors, while comparing their own results with data from the literature on surgical treatment using other local procedures,¹⁵ identified that their postoperative wound complications (7.4%) were comparable to the results of other researchers.^{3,5,14,16} The method presented in the authors' assessment is simple and recommendable, however, as the research shows, it does not forgive basic medical errors. When performing a surgical incision, the surgeon

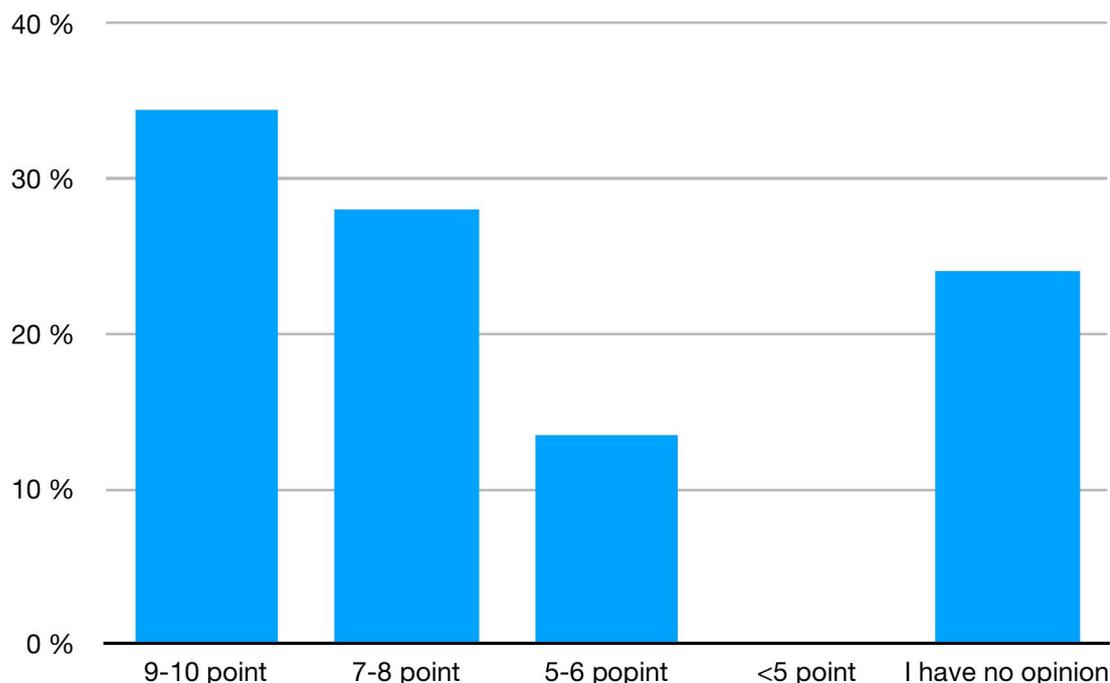


Figure 3. Cosmetic effects on 10-point VAS.

must be certain the cut is perpendicular to the skin surface. It should be noted that, even despite the application of patches stretching gluteal margin, a depression remains in the midline, and improper positioning of the knife leads to an oblique skin incision. This, consequentially, makes it difficult to suture the wounds properly. The careful adaptation of the wound edges is extremely important in this surgical technique, otherwise a step-like seam of the sliding part of the wound usually occurs. This, in turn leads to complications in the healing of the surgical wound and may result in the formation of unaesthetic deep scarring. The condition for the effective treatment of the pilonidal sinus is its excision together with the fistula channels and their external opening. If the surgical incision is not properly planned, the attempt to do a radical excision of the hairline often leads to difficulties in closing the wound after excised lesions.

Extensive surgical procedures in the immediate proximity of the anus raises some concerns, especially among less experienced surgeons, which may be a reason for error. It is unacceptable to try to stitch skin under tension, because this usually leads to failure and separation of the surgical wound. Cutting the natal cleft in one block with the pilonidal sinus is usually accompanied by large bleeding, however, according to the authors' experience, it is pointless and time-consuming to focus on detailed hemostasis during this operation. It is much more beneficial to efficiently remove the changed tissues according to the previously designed cut, then fill the cavity with sterile bandages and apply a temporary pressure lasting 1.5–2.0 minutes. Subsequently, up to 90% of bleeding stops spontaneously after this time. The main advantage of such a procedure is the possibility of assessing the completeness of excision of all sinuses lateral channels. A large amount of coagulation necrosis in the wound makes such an assessment difficult and may cause an increased rate of relapse. The possibility of modifying the surgical incision in the case of the finding that the originally planned incision does not allow for radical excision of pathological changes should be considered a great advantage of the presented method of treating the sacrococcygeal pilonidal disease.

With this technique, there is always the possibility of extending cuts to completely remove all of the side channels of the sinus. In a situation where the pre-planned patch turns out to be too short, it can always be extended. It is important to initially design the base size of the skin-fat flap to take into account the possibility of extending the scope of the operation.

Additionally, the authors noted that the duration of the surgical procedure, on average 55 minutes, compared to the results reported in other research studies using the Limberg, Karydakis or Bascom methods, is in many cases longer by up to several minutes.^{3,5,10} Comparison of this data is quite difficult, because the techniques differ significantly, and the parameters do not specify the timing of the procedures, both beginning and completion. In addition, the duration of the procedure is also affected by the extent of pathological changes in the natal cleft and buttocks. It should be em-

phasized that the technique presented by the authors in this study allows the excision of both small and very extensive and complicated sinus fistulas, and the operation of the latter significantly extends the duration of the surgery. In their study, the authors devoted much attention to superficial sensory disorders that appear after the crescent-like excision of the pilonidal sinus in the sacrococcygeal area. The analysis of current literature has shown that researchers performing other local plastics as part of the treatment of pilonidal sinus most often casually refer to the problem of postoperative disorders of superficial sensation or completely omit it.^{17–19} It is the opinion of the authors that, despite the undoubted advantages of the method described in this study, a relatively high percentage of sensory disturbances in the area of the natal cleft were seen. This area is particularly sensitive to sexual stimuli, so sensory disturbances in this region can be considered a drawback. This may be important, because the pilonidal disease mainly affects young people, and thus part of the population with high sexual activity. A somewhat surprising finding for the authors was that in the group of patients with transient sensory disorders, 44 (91%) reported that it did not affect the quality of life, and in the group of patients with permanent sensory disorders, only 11 (19%) subjects declared a deterioration in their quality of life. The assessment of the cosmetic effect after the operation seems to be very easy, however, in the case of the presented surgical technique, to the authors' surprise, a significant group of patients 26 (24%) was surprised by the question and had a problem with giving an unambiguous answer. The basis for doubt was the fact that the operated area is not visible to the patient during everyday functioning and is also hidden by undergarments. According to the authors, 92 (62.5%) of the patients reported very good and good assessments of the cosmetic effect, despite the extensive operation, can be considered satisfactory. The authors were amazed by the fact that 146 (98.6%) out of 148 patients in this study positively assessed the method they were treated with and would recommend this procedure to family members or friends suffering from pilonidal disease. A negative opinion was given by a patient with recurrence of the disease and a patient whose surgical wound dispersed completely. All patients with recurrence of the disease returned to the Center for an additional operation with good results.

6. CONCLUSIONS

The crescent-like excision of a pilonidal sinus in the sacroiliac area in the method discussed in this study, is a recommendable method of treating pilonidal disease that meets the criteria of a modern approach.

The advantage of this method is the ease of delineate the surgical incision and the ability to effectively excise not only small sinuses, but also large-scale changes.

The authors recognize a drawback in a significant percentage of superficial sensory disturbances within the dermal-fat flap.

Conflict of interest

The authors declare that they have no competing interests.

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