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RESEARCH ARTICLE

# Comparison of Unroofing and Curettage versus Midline Excision with Primary Closure for the Treatment of Sacrococcygeal Pilonidal Disease: A Retrospective Comparative Cohort Study

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## ABSTRACT

**Aim:** To compare unroofing and curettage with excision followed by midline primary closure in terms of perioperative recovery, postoperative morbidity, and recurrence in patients undergoing elective surgery for chronic sacrococcygeal pilonidal disease.

**Method:** This single-center retrospective comparative cohort study included 289 consecutive patients treated between March 2019 and December 2021: unroofing and curettage (n=147) and midline primary closure (n=142). The predefined outcomes were operative time, length of hospital stay, time to return to work or school, postoperative complications, and recurrence. Because treatment allocation was not randomized, all between-group comparisons were interpreted as unadjusted associations.

**Results:** The groups were broadly comparable with respect to age, sex distribution, body mass index, American Society of Anesthesiologists class, and follow-up duration. However, clinically relevant baseline imbalance was present in disease status, with recurrent disease being more frequent in the midline primary closure group. Compared with midline primary closure, unroofing and curettage was associated with shorter operative time [14.0±3.9 vs. 32.46±8.5 min; mean difference (MD), -18.46 min; 95% confidence interval (CI), -19.99 to -16.93; p<0.001], shorter hospital stay (8.0±3.4 vs. 25.0±7.6 h; MD, -17.00 h; 95% CI, -18.37 to -15.63; p<0.001), and earlier return to work or school (3.5±2.8 vs. 11.09±3.6 days; MD, -7.59 days; 95% CI, -8.34 to -6.84; p<0.001). Postoperative complications occurred less frequently after unroofing and curettage [2/147 (1.36%) vs. 33/142 (23.24%); relative risk (RR), 0.06; 95% CI, 0.01-0.24; p<0.001]. Recurrence was numerically lower in the unroofing and curettage group [5/147 (3.40%)] than in the midline primary closure group [10/142 (7.04%)]; however, this difference was not statistically significant (RR, 0.48; 95% CI, 0.17-1.38).

**Conclusion:** In this retrospective cohort, unroofing/curettage was associated with more favorable perioperative recovery and lower postoperative morbidity than excision followed by midline primary closure. Although the observed recurrence rate was lower after unroofing and curettage, the between-group difference was not statistically significant. Given the non-randomized design and baseline imbalance, which suggest potential selection bias and confounding by disease complexity, these findings should be interpreted as associative rather than causal.

**Keywords:** Sacrococcygeal pilonidal disease, unroofing and curettage, midline primary closure

## Introduction

Sacrococcygeal pilonidal disease is a common acquired inflammatory disorder of the natal cleft that predominantly affects adolescents and young adults and is associated with substantial morbidity, impaired quality of life, and loss of work or school time.[1-3] Current evidence supports an acquired pathogenesis in which loose hairs penetrate vulnerable skin within a deep natal cleft under the influence of friction, moisture, and repetitive microtrauma, leading to a foreign-body reaction, sinus formation, and recurrent inflammation.[2-4]

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Although numerous surgical options have been described, the optimal treatment strategy remains controversial because procedures differ in postoperative morbidity, wound healing, recovery time, and recurrence.[1-3] Contemporary guidelines increasingly discourage routine midline primary closure because of less favorable wound and recurrence outcomes than off-midline or tissue-sparing approaches.[1,5-7] Nevertheless, excision followed by primary closure is still used in selected patients in routine practice, making direct real-world comparisons clinically relevant.

Unroofing and curettage is a tissue-sparing open technique that can often be performed under local anesthesia in an outpatient setting and has been associated with short operative time, rapid recovery, and low complication rates.[8-11] In contrast, midline primary closure may be more vulnerable to wound complications because the suture line remains within the deep intergluteal cleft.[1,2,5-7,12-14] Comparative studies have shown heterogeneous results across open, tissue-sparing, flap-based, and closure-based techniques, and outcomes may additionally be influenced by baseline disease complexity and patient-related factors.[15-20] Relevant comparative studies have further demonstrated variability in recurrence and postoperative outcomes across different surgical approaches.[8,9,11,16-21]

However, direct comparisons between unroofing/curettage and conventional midline primary closure remain limited, and the available literature is heterogeneous in case selection, disease classification, and outcome definitions.[2,4,10-14] Therefore, the present study aimed to compare unroofing and curettage with excision followed by midline primary closure in terms of perioperative outcomes, postoperative complications, and recurrence in patients undergoing elective surgery for chronic sacrococcygeal pilonidal disease. We hypothesized that unroofing and curettage would be associated with more favorable perioperative recovery and lower postoperative morbidity than midline primary closure.

## Materials and Methods

### Study Design and Setting

This single-center retrospective comparative cohort study was conducted at the Clinic of General Surgery, University of Health Sciences Türkiye, Kartal Dr. Lütfi Kırdar City Hospital, İstanbul, Türkiye. Consecutive patients who underwent elective surgery for chronic sacrococcygeal pilonidal disease between March 2019 and December 2021 were screened for eligibility. The study was designed, conducted, and reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology statement.[22]

### Ethics

Ethics committee approval was obtained prior to data collection from the University of Health Sciences Türkiye, Kartal Dr. Lütfi Kırdar City Hospital Clinical Research Ethics Committee (approval no.: 2022/51-4/222/1; dated: 30.03.2022). The study was conducted in accordance with the Declaration of Helsinki.[23] Because of the retrospective design and the use of anonymized clinical records, written informed consent was waived in accordance with institutional policy.

### Participants

All patients undergoing elective surgical treatment for chronic sacrococcygeal pilonidal disease during the study period were assessed for eligibility. Inclusion criteria were age ≥16 years, clinical diagnosis of chronic sacrococcygeal pilonidal disease, treatment with either unroofing and curettage or excision followed by midline primary closure, and availability of follow-up information. Exclusion criteria were acute pilonidal abscess treated only by drainage, hidradenitis suppurativa or ectopic pilonidal disease, previous complex flap reconstruction, and procedures other than the two study techniques under investigation, including excision with secondary healing, marsupialization, phenol-based treatment, endoscopic procedures, and laser-based techniques.

The final analytic cohort comprised 289 patients: 147 in the unroofing and curettage group and 142 in the midline primary closure group. A reconstructed flow diagram based on the final analytic cohort and predefined eligibility criteria is presented in Figure 1.

### Data Sources and Variables

Patient data were obtained from hospital records, operative notes, outpatient follow-up files, and structured telephone follow-up when necessary. Recorded variables included age, sex, body mass index, American Society of Anesthesiologists (ASA) class, anesthesia type, sinus status, operative time, hospital stay, time to return to work or school, postoperative complications, recurrence, and follow-up duration.

### Disease Classification

Disease status was categorized pragmatically from preoperative clinical assessment and operative documentation as follows: primary disease, defined as single or multiple midline pits without prior surgery or lateral extension; complicated disease, defined as sinus disease with lateral fistulization related to previous infection or abscess formation; and recurrent disease, defined as disease arising in a previously operated field. This framework was adopted for chart-based categorization. It is acknowledged that it does not represent a universally standardized international classification system.[4]

### Surgical Technique

### Unroofing and Curettage

In the unroofing and curettage group, the procedure was performed with the patient in the prone position,

predominantly under local anesthesia; a small minority underwent spinal anesthesia because of patient preference. Local anesthesia consisted of 2% lidocaine with epinephrine (1:200,000). A curved probe was introduced through the primary pit into the sinus tract, and the overlying tissue was incised to completely deroof the tract. Lateral extensions, when present, were similarly identified and opened. Hair, keratinous debris, and necrotic material were removed, and the cavity walls were gently curetted while preserving viable granulation tissue at the wound base. Electrocautery was not routinely used. Hemostasis was achieved via direct manual compression. The wound was packed with ointment-impregnated gauze and left open for healing by secondary intention. Patients were observed for approximately 6 h and discharged on the same day if no active bleeding was detected. An illustrative postoperative wound appearance and a completely healed wound are shown in Figure 2.

### Midline Excision with Primary Closure

In the midline primary closure group, all procedures were performed under spinal anesthesia with the patient in the prone jackknife position. Sinus tracts were delineated using methylene blue instilled through visible pit openings. A midline elliptical incision encompassing the pits and stained tracts was made, and all diseased tissue was excised en bloc down to the presacral fascia. Hemostasis was achieved using electrocautery and ligation as required. No off-midline mobilization, flap-based reconstruction, or tension-reducing flap technique was used. The wound was closed in layers, with absorbable sutures used for deep subcutaneous approximation and non-absorbable interrupted sutures for skin closure. Drain placement was selective rather than routine and was reserved for patients considered intraoperatively at increased risk of postoperative fluid collection or bleeding. In this cohort, a drain was placed in three patients. Patients were generally discharged after wound inspection at approximately 24 h. Preoperative and postoperative views of this technique are shown in Figure 3.

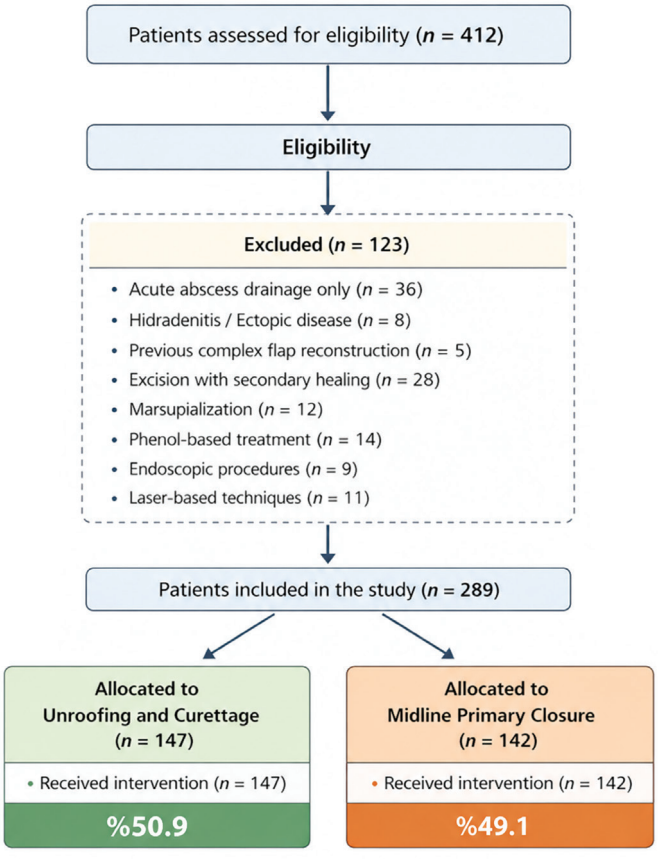


**Figure 1.** Flow diagram of patient selection and inclusion. Flow chart showing the number of patients assessed for eligibility, excluded according to predefined criteria, and included in the final analytic cohort, stratified into the unroofing and curettage group and the midline primary closure group

### Treatment Allocation

Treatment allocation was not randomized. The choice of surgical technique was made by the operating surgeon according to clinical judgment, technical feasibility, disease extent, and patient-related factors, including anesthetic preference. This non-randomized allocation represents a

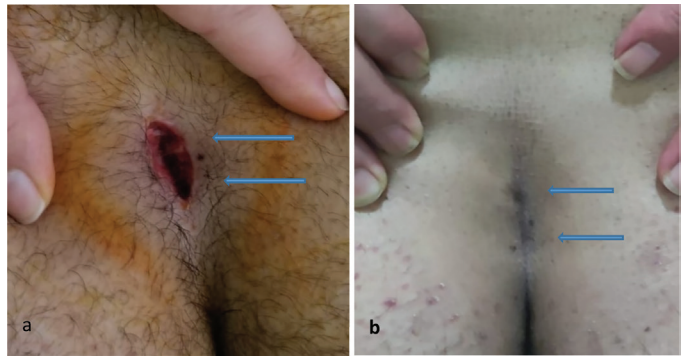


**Figure 2.** Unroofing and curettage in sacrococcygeal pilonidal disease. (a) Immediate postoperative appearance of the wound after unroofing and curettage (arrows). (b) Completely healed wound after unroofing and curettage (arrows)

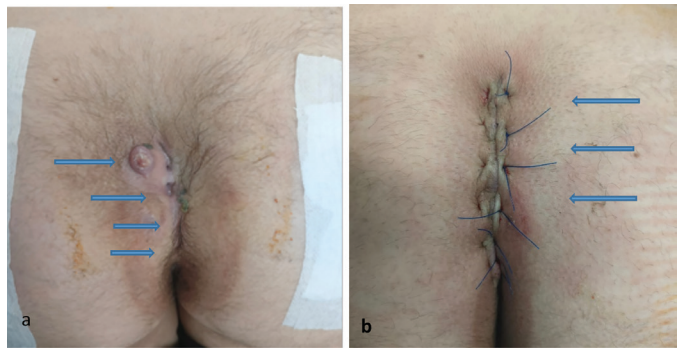


**Figure 3.** Midline excision with primary closure in complicated sacrococcygeal pilonidal disease. (a) Preoperative view demonstrating sinus openings in a complicated case (arrows). (b) Postoperative appearance after complete excision and midline primary closure (arrows)

potential source of selection bias and confounding and was considered in the interpretation of all comparative findings. Because complete regression-ready patient-level data were not available during manuscript reconstruction, multivariable-adjusted analyses could not be performed.

### Postoperative Care and Follow-up

Patients in the unroofing and curettage group underwent daily dressing changes using non-adherent gauze with topical antiseptic ointment. Following instruction, dressings could be performed by relatives or at local healthcare facilities. Patients in the midline primary closure group received standard wound care, and skin sutures were removed 10-14 days after surgery. Prophylactic antibiotics were not used routinely unless there was clinical evidence of infection. All patients were advised regarding local hygiene and hair depilation as adjunctive preventive measures.[24]

Follow-up visits were scheduled at postoperative weeks 1, 3, and 6 and then at approximately 6-month intervals until complete wound healing. If in-person attendance was not feasible, structured telephone follow-up was used. Mean follow-up duration was 32.25±7.5 months in the unroofing and curettage group and 31.07±6.5 months in the midline primary closure group, as summarized in Table 1.

### Outcome Definitions

The predefined outcomes were operative time, length of hospital stay, time to return to work or school, postoperative complications, and recurrence. Operative time was defined as the interval from skin incision to completion of wound dressing or skin closure. Length of hospital stay was measured in hours from the end of surgery to discharge. Time to return to work or school was defined as the number of days from surgery to full resumption of usual occupational or educational activities based on patient report.

For this retrospective analysis, postoperative complications were classified as wound infection, abscess, wound dehiscence, hematoma, and postoperative bleeding. Recurrence was defined as the development of a new sinus opening, discharge, abscess, or clinically diagnosed recurrent disease in the previously treated area after documented initial healing. Recurrence ascertainment was based primarily on outpatient clinical examination and, when necessary, structured telephone follow-up. It is acknowledged that partial reliance on telephone follow-up may have introduced recall bias or outcome misclassification.

Time to complete wound healing, formal pain scores, cosmetic assessment, and validated patient-reported outcomes were not consistently available in the original dataset and were therefore not analyzed.

### Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, version 20.0 (IBM Corp., Armonk, NY, USA). Continuous variables were summarized as mean ± standard deviation when approximately normally distributed and compared using the independent-samples Student's t-test. The Mann-Whitney U test was used for non-normally distributed continuous variables. Categorical variables were summarized as

**Table 1.** Baseline demographic, clinical, and disease characteristics of patients undergoing unroofing and curettage or midline primary closure for chronic sacrococcygeal pilonidal disease

| Variable | Unroofing and curettage (n=147) | Midline primary closure (n=142) | p-value |
|---|---|---|---|
| **Age, years** | 25.4±7.9 | 26.7±8.1 | 0.17 |
| **Male sex, n (%)** | 118 (80.3) | 114 (80.3) | 1.00 |
| **Body mass index, kg/m²** | 27.9±5.7 | 26.7±5.3 | 0.065 |
| **ASA class, n (%)** | | | 0.34 |
| Class I | 105 (71.4) | 94 (66.2) | |
| Class II | 42 (28.6) | 48 (33.8) | |
| **Anesthesia type, n (%)** | | | <0.001 |
| Local | 132 (89.8) | 0 (0.0) | |
| Spinal | 15 (10.2) | 142 (100.0) | |
| **Sinus status, n (%)** | | | 0.019 |
| Primary | 125 (85.1) | 107 (75.4) | |
| Complicated | 17 (11.6) | 18 (12.7) | |
| Recurrent | 5 (3.4) | 17 (12.0) | |
| Follow-up duration, months | 32.25±7.5 | 31.07±6.5 | 0.15 |

Values are presented as mean±standard deviation or number (percentage), as appropriate. P-values refer to between-group comparisons

ASA: American Society of Anesthesiologists

number (percentage) and compared using the chi-square test or Fisher's exact test, as appropriate. For key continuous outcomes, mean differences (MDs) with 95% confidence intervals (CIs) were calculated. For key dichotomous outcomes, relative risks (RRs) with 95%CIs were calculated. Absolute risk reduction and number needed to treat were calculated for postoperative complications. A two-sided p-value <0.05 was considered statistically significant. Because treatment allocation was not randomized and adjusted regression modeling was not feasible with the reconstructed dataset, all comparative results were interpreted as unadjusted associations.

## Results

### Baseline Characteristics

A total of 289 patients were included in the final analysis, comprising 147 patients in the unroofing and curettage group and 142 patients in the midline primary closure group. Baseline demographic and clinical characteristics are summarized in Table 1.

The two groups were broadly comparable with respect to age, sex distribution, body mass index, ASA class, and duration of follow-up. Mean age was 25.4±7.9 years in the unroofing and curettage group and 26.7±8.1 years in the midline primary closure group. Male sex predominated in both groups. Body mass index and ASA class distribution were also similar between groups.

However, clinically relevant baseline imbalance was present in disease status. Recurrent disease was proportionally more frequent in the midline primary closure group than in the unroofing and curettage group [17/142 (12.0%) vs. 5/147 (3.4%)]. In addition, unroofing/curettage was performed predominantly under local anesthesia, whereas all procedures in the midline primary closure group were performed under spinal anesthesia. These differences suggest potential confounding by disease complexity and treatment selection.

### Perioperative Outcomes

Perioperative outcomes are presented in Table 2. Unroofing/curettage was associated with a significantly shorter operative time than midline primary closure (14.0±3.9 vs. 32.46±8.5 min; MD, -18.46 min; 95%CI, -19.99 to -16.93; p<0.001). Length of hospital stay was also significantly shorter in the unroofing and curettage group (8.0±3.4 vs. 25.0±7.6 h; MD, -17.00 h; 95%CI, -18.37 to -15.63; p<0.001). Likewise, time to return to work or school was markedly shorter following unroofing and curettage than after midline primary closure (3.5±2.8 vs. 11.09±3.6 days; MD, -7.59 days; 95% CI, -8.34 to -6.84; p<0.001).

### Postoperative Complications

Postoperative complications occurred in 2 of 147 patients (1.36%) in the unroofing and curettage group and in 33 of 142 patients (23.24%) in the midline primary closure group (RR, 0.06; 95%CI, 0.01-0.24; p<0.001), as detailed in Table 2. The absolute risk reduction was 21.88%, corresponding to a number needed to treat of approximately 5 to prevent one additional postoperative complication, assuming the observed association reflects a true effect.

In the unroofing and curettage group, both complications were postoperative bleeding events that were successfully managed

**Table 2.** Perioperative outcomes, postoperative morbidity, and recurrence according to surgical technique

| Outcome | Unroofing and curettage (n=147) | Midline primary closure (n=142) | Effect estimate (95% CI) | p-value |
|---|---|---|---|---|
| **Perioperative outcomes** | | | | |
| Operative time, min | 14.0±3.9 | 32.46±8.5 | MD, -18.46 (-19.99 to -16.93) | <0.001 |
| Length of hospital stay, h | 8.0±3.4 | 25.0±7.6 | MD, -17.00 (-18.37 to -15.63) | <0.001 |
| Time to return to work or school, days | 3.5±2.8 | 11.09±3.6 | MD, -7.59 (-8.34 to -6.84) | <0.001 |
| **Postoperative morbidity** | | | | |
| Any postoperative complication, n (%) | 2 (1.36) | 33 (23.24) | RR, 0.06 (0.01 to 0.24) | <0.001 |
| Wound infection, n | 0 | 23 | - | - |
| Postoperative abscess, n | 0 | 5 | - | - |
| Wound dehiscence, n | 0 | 4 | - | - |
| Hematoma, n | 0 | 1 | - | - |
| Postoperative bleeding, n | 2 | 0 | - | - |
| **Recurrence** | | | | |
| Disease recurrence, n (%) | 5 (3.40) | 10 (7.04) | RR, 0.48 (0.17 to 1.38) | 0.19 |

Values are presented as mean ± standard deviation or number (percentage), as appropriate. P-values represent unadjusted between-group comparisons

MD: Mean difference, RR: Relative risk, CI: Confidence interval

with bedside local intervention, and no patient required reoperation. No wound infection, abscess, wound dehiscence, or hematoma was observed in this group. In contrast, wound infection was the most common complication in the midline primary closure group (n=23), followed by abscess formation (n=5), wound dehiscence (n=4), and hematoma (n=1). No perioperative mortality occurred in either group.

### Recurrence

During follow-up, recurrence was observed in 5 of 147 patients (3.40%) in the unroofing and curettage group and in 10 of 142 patients (7.04%) in the midline primary closure group (RR, 0.48; 95% CI, 0.17-1.38), as shown in Table 2. Although recurrence was numerically less frequent after unroofing and curettage, the between-group difference was not statistically significant.

To contextualize these recurrence findings, the recurrence rates observed in the present cohort should be interpreted alongside the heterogeneous comparative literature summarized in Table 3, which demonstrates that recurrence estimates vary across tissue-sparing, open, flap-based, and closure-based techniques, as well as with follow-up duration and comparator strategy.[8,9,11,16-21]

## Discussion

In this retrospective comparative cohort study, unroofing/curettage was associated with shorter operative time, shorter hospital stay, earlier return to work or school, and substantially lower observed postoperative morbidity than excision followed by midline primary closure. These findings are clinically relevant because sacrococcygeal pilonidal disease predominantly affects adolescents and young adults, in whom treatment-related disability, time away from work or school, and postoperative wound burden are important determinants of overall treatment value.[1-3]

The favorable short-term recovery profile observed after unroofing and curettage is consistent with previous reports indicating that this tissue-sparing technique can be performed efficiently in an outpatient setting, often under local anesthesia, with a rapid return to daily activities.[8-11] In the meta-analysis by Garg et al.[10], deroofing with curettage was associated with low recurrence and complication rates, short operative duration, and early resumption of normal activity. Similarly, observational cohort studies have reported acceptable short-term outcomes for unroofing and curettage in both simple and more complex forms of disease.[9,11,20,21,25] Earlier comparative studies have also demonstrated that open or limited techniques may provide favorable morbidity profiles relative to closure-based strategies, although differences in wound-healing time and recurrence have varied across studies.[16,17] By contrast, studies evaluating flap-based or modified closure techniques have generally shown better results than conventional midline closure, underscoring that the critical issue is not closure itself but whether it is placed in the midline and exposed to unfavorable local conditions.[18,19] These patterns are reflected in Table 3.

The marked difference in postoperative morbidity observed in the present cohort deserves particular attention. Complications were concentrated in the midline primary closure group, with wound infection representing the most frequent adverse event. This pattern is biologically plausible, as the intergluteal cleft constitutes a moist, high-friction, hair-bearing environment

**Table 3.** Selected studies relevant to unroofing/curettage and closure-based procedures in sacrococcygeal pilonidal disease

| Study | Year | Surgical technique(s) | Number of patients | Follow-up, months, mean ± SD or median (range) | Recurrence, n (%) |
|---|---|---|---|---|---|
| Gencosmanoglu and Inceoglu[8] | 2005 | Modified lay-open (modified UC)/primary closure | 73/69 | 47 (24-69) | 1 (1.4)/12 (17.4) |
| Karakayali et al.[17] | 2009 | Unroofing and marsupialization/Limberg flap | 70/70 | 12-15 | 0/1 (1.4) |
| Kepenekci et al.[9] | 2010 | Unroofing and curettage | 297 | 54±28 | 6 (2.02) |
| Muzi et al.[18] | 2010 | Limberg flap/primary closure | 130/130 | 47.83±6.6/45.74±7.6 | 0/5 (3.8) |
| Lorant et al.[16] | 2011 | Modified lay-open (modified UC)/primary closure | 41/39 | 12 | 1 (2.44)/4 (10.25) |
| Arslan et al.[19] | 2016 | Primary closure/Modified primary closure | 44/54 | Not reported | 4 (9.1)/0 |
| Garg and Yagnik[20] | 2021 | Unroofing and curettage | 111 | 38 (6-111) | 4 (3.6) |
| Sahin et al.[21] | 2022 | Unroofing and curettage/modified Limberg flap | 135/143 | 64.53±14.9/62.15±13.04 | 2 (1.5)/6 (4.2) |
| Olcucuoglu and Sahin[11] | 2022 | Unroofing and curettage | 203 | 52 (36-67) | 10 (4.9) |
| Current study | - | Unroofing and curettage/midline primary closure | 147/142 | 32.25±7.5/31.07±6.5 | 5 (3.4)/10 (7.04) |

Follow-up is reported as mean ± SD or median (range), according to the original article. "Not reported" indicates that the corresponding summary measure was not clearly available in the accessible source

UC: Unroofing and curettage, SD: Standard deviation

that may compromise wound healing when the suture line is positioned in the midline. This interpretation is consistent with the broader literature indicating that midline closure is associated with less favorable wound outcomes than off-midline closure or tissue-sparing open techniques.[1,2,5-7,12-14] McCallum et al.[12] demonstrated that, when closure is selected, off-midline closure is superior to midline closure with respect to wound complications and recurrence. More recent evidence, including the meta-analysis by Stauffer et al.[13] and the network meta-analysis by Bi et al.[14], has further reinforced the unfavorable profile of primary midline closure relative to off-midline approaches. Sinusectomy with primary closure has also been investigated as an alternative to wider excision and primary closure, again underscoring that technical nuances matter when closure-based outcomes are interpreted.[26]

The recurrence findings in our study warrant more cautious interpretation than the perioperative and morbidity outcomes. Although the observed recurrence rate was lower in the unroofing and curettage group, the difference did not reach statistical significance, and the CI was wide. Moreover, the comparison remains vulnerable to confounding. The midline primary closure group included a higher proportion of patients with recurrent disease at baseline, and all procedures in that group were performed under spinal anesthesia, whereas most unroofing and curettage procedures were performed under local anesthesia. These differences likely reflect surgeon-driven treatment allocation according to disease extent, technical feasibility, and patient-related factors. Accordingly, the recurrence result should be interpreted as an unadjusted observational finding rather than definitive evidence of causal superiority.

The comparative literature also indicates that recurrence should be interpreted in light of heterogeneity across techniques grouped under the broad labels of "open" and "closure-based" procedures. For example, Lorant et al.[16] compared laying open with primary closure, whereas Karakayali et al.[17] evaluated unroofing and marsupialization against Limberg flap repair. Muzi et al.[18] reported favorable outcomes with Limberg flap compared with modified primary closure, and Arslan et al.[19] described improved results with a modified closure method. Likewise, long-term follow-up after laying open and curettage under local anesthesia has shown durable outcomes in selected patients.[20] The present study should therefore not be interpreted as a comparison between unroofing and curettage and all closure-based strategies; rather, it specifically compares unroofing and curettage with conventional midline primary closure, a distinction that is important and is illustrated in Table 3.

The present findings should also be interpreted in the context of contemporary clinical guidance. International guidelines no longer favor routine midline primary closure as a first-line strategy for sacrococcygeal pilonidal disease.[1,5-7] Instead, off-midline closure techniques and tissue-sparing approaches are increasingly preferred when surgery is indicated, and minimally invasive strategies and adjunctive measures such as sinusectomy, endoscopic treatment, and laser-assisted hair control continue to evolve.[1,2,14,24,26] Within this context, our results do not challenge prevailing treatment trends; rather, they provide institutional real-world data suggesting that unroofing and curettage may be associated with lower postoperative wound burden and faster recovery than a conventional midline closure strategy.

**Study Limitations**

This study has several strengths. First, it included a relatively large single-center cohort, evaluated clinically relevant outcomes, and provided mean follow-up exceeding 31 months in both groups. Second, the two index procedures were clearly identifiable, and the comparator was explicitly defined as midline primary closure, which is essential for clinical interpretability. In addition, all unroofing and curettage procedures were performed by the same senior surgeon, which likely improved technical consistency within that group.

Several limitations should also be acknowledged. First, the retrospective, non-randomized design is susceptible to selection bias. Second, the imbalance in recurrent disease and anesthesia type suggests confounding by case complexity. Third, multivariable-adjusted or propensity-based analyses could not be performed because complete regression-ready patient-level data were not available during manuscript reconstruction. Fourth, complications were not prospectively graded using a standardized severity classification, such as the Clavien-Dindo system. Fifth, pain scores, cosmetic outcomes, patient satisfaction, and time to complete wound healing were not available in a standardized format. Sixth, recurrence ascertainment partly relied on structured telephone follow-up, which may have introduced recall bias or misclassification. Finally, disease status was categorized using a pragmatic chart-based framework rather than a universally standardized international classification system.[4]

Future studies should incorporate prospective designs, standardized disease classification, predefined treatment-allocation criteria, validated patient-reported outcomes, and adjusted analytical strategies. Multivariable regression, propensity-based approaches, and time-to-event analyses for recurrence would materially strengthen comparative interpretation. Until such data are available, unroofing and curettage should be regarded as a pragmatic tissue-sparing option with favorable short-term recovery and low postoperative morbidity in appropriately selected patients, rather than a universally superior approach.

## Conclusion

In this retrospective comparative cohort study, unroofing and curettage was associated with shorter operative time, shorter hospital stay, earlier return to work or school, and lower observed postoperative complication rates than excision followed by midline primary closure. Although the observed recurrence rate was lower after unroofing and curettage, the between-group difference was not statistically significant. Because treatment allocation was non-randomized and baseline imbalance suggests potential selection bias and confounding by case complexity, these findings should be interpreted as associative and hypothesis-generating rather than definitive causal evidence. Within these limitations, unroofing/curettage appears to be a clinically useful tissue-sparing option for selected patients with chronic sacrococcygeal pilonidal disease.

### Ethics

**Ethics Committee Approval:** Ethics committee approval was obtained prior to data collection from the University of Health Sciences Türkiye, Kartal Dr. Lütfi Kırdar City Hospital Clinical Research Ethics Committee (approval no.: 2022/51-4/222/1; dated: 30.03.2022).

**Informed Consent:** Because of the retrospective design and the use of anonymized clinical records, written informed consent was waived in accordance with institutional policy.

### Footnotes

### Authorship Contributions

Surgical and Medical Practices: A.B., G.Ç., Concept: A.B., G.Ç., Design: A.B., G.Ç., Data Collection or Processing: M.F.B., Analysis or Interpretation: V.Ç., Literature Search: A.B., V.Ç., Writing: A.B.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors have no conflicts of interest including relevant financial interests, activities, relationships, and affiliations.

**Declaration Regarding the Use of AI and AI-Assisted Technologies:** The authors declare that no artificial intelligence (AI) or AI-assisted technologies were used in the preparation of this manuscript.

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