

# Practice Parameters for the Management of Pilonidal Disease

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The American Society of Colon and Rectal Surgeons is dedicated to ensuring high-quality patient care by advancing the science, prevention, and management of disorders and diseases of the colon, rectum, and anus. The Standards Committee is composed of Society members who are chosen because they have demonstrated expertise in the specialty of colon and rectal surgery. This Committee was created to lead international efforts in defining quality care for conditions related to the colon, rectum, and anus. This is accompanied by developing Clinical Practice Guidelines based on the best available evidence. These guidelines are inclusive, and not prescriptive. Their purpose is to provide information on which decisions can be made, rather than dictate a specific form of treatment. These guidelines are intended for the use of all practitioners, health care workers, and patients who desire information about the management of the conditions addressed by the topics covered in these guidelines.

It should be recognized that these guidelines should not be deemed inclusive of all proper methods of care or exclusive of methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding the propriety of any specific procedure must be made by the physician in light of all the circumstances presented by the individual patient.

## METHODOLOGY

An organized search of MEDLINE, PubMed, Embase, and the Cochrane Database of Collected Reviews was performed through December 2011. Key-word combinations included pilonidal disease, pilonidal sinus, pilonidal cyst, pilonidal abscess, recurrence, gluteal cleft, natal cleft, fistula, flap, cleft-lift, and related articles. Directed searches of the embedded references from the primary articles

were also performed in selected circumstances. Although not exclusionary, primary authors focused on all English language manuscripts and studies of adults. Recommendations were formulated by the primary authors and reviewed by the entire Standards Committee. The final grade of recommendation was performed by using the Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) system (Table 1).<sup>1</sup>

## STATEMENT OF THE PROBLEM

Pilonidal disease is a potentially debilitating condition affecting 70,000 patients annually in the United States alone.<sup>2</sup> Although commonly encountered in practice, the cause and optimal treatment of this disease have remained controversial since its first description by Mayo in 1833.<sup>3</sup> Although originally felt to be of congenital origin secondary to abnormal skin in the gluteal cleft,<sup>4</sup> the current widely accepted theory describes the origin of pilonidal disease as an acquired condition intimately related to the presence of hair in the cleft.<sup>5</sup> Loose hairs in the natal cleft skin create a foreign body reaction that ultimately leads to formation of midline pits and, in some cases, secondary infection.<sup>6,7</sup> The spectrum of pilonidal disease presentation varies from a chronically inflamed area and/or sinus with persistent drainage to the more acute presentation of an associated abscess or extensive subcutaneous tracts. Numerous treatment options ranging from gluteal cleft shaving and simple excision to extensive flap procedures currently exist. This practice parameter will focus on the evaluation and management of pilonidal disease.

## INITIAL EVALUATION

1. A disease-specific history and physical examination should be performed, emphasizing symptoms, risk factors, and the presence of secondary infection. Grade of Recommendation: Strong recommendation based on low-quality evidence, 1C.

**TABLE 1.** The GRADE System: Grading Recommendations<sup>a</sup>

	Description	Benefit vs risk and burdens	Methodological quality of supporting evidence	Implications
1A	Strong recommendation, High-quality evidence	Benefits clearly outweigh risk and burdens or vice versa	RCTs without important limitations or overwhelming evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1B	Strong recommendation, Moderate-quality evidence	Benefits clearly outweigh risk and burdens or vice versa	RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1C	Strong recommendation, Low- or very-low-quality evidence	Benefits clearly outweigh risk and burdens or vice versa	Observational studies or case series	Strong recommendation but may change when higher quality evidence becomes available
2A	Weak recommendation, High-quality evidence	Benefits closely balanced with risks and burdens	RCTs without important limitations or overwhelming evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patients' or societal values
2B	Weak recommendations, Moderate-quality evidence	Benefits closely balanced with risks and burdens	RCTs with important limitations (inconsistent results, methodological flaws, indirect or imprecise) or exceptionally strong evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patients' or societal values
2C	Weak recommendation, Low- or very-low-quality evidence	Uncertainty in the estimates of benefits, risks, and burden; benefits, risk, and burden may be closely balanced	Observational studies or case series	Very weak recommendations; other alternatives may be equally reasonable

GRADE = Grades of Recommendation, Assessment, Development, and Evaluation; RCT = randomized controlled trial.

<sup>a</sup>Adapted from: Guyatt G, Guterman D, Baumann MH, et al. Grading strength of recommendations and quality of evidence in clinical guidelines: report from an American College of Chest Physicians Task Force. *Chest*. 2006;129:174–181. Used with permission.

The diagnosis of pilonidal disease is most often a clinical one, based on the patient's history and physical findings in the gluteal cleft, especially in patients with chronic or recurrent disease. However, it is important to distinguish pilonidal disease from alternative or concurrent diagnoses such as hidradenitis suppurativa, infected skin furuncles, Crohn's disease, perianal fistula, and infectious processes including tuberculosis, syphilis, and actinomycosis.<sup>8</sup> On examination, the presence of characteristic midline pits in the gluteal cleft in patients with pilonidal disease is almost always visible, sometimes with hair or debris extruding from the openings. Additionally, whereas in the acute setting patients may present with cellulitis or a painful, fluctuant mass indicating the presence of an abscess, the chronic state is most often manifested by chronic draining sinus disease in the intergluteal fold and/or recurrent episodes of acute infections. It is also important to perform a thorough anorectal examination to evaluate for concomitant fistulous disease, Crohn's disease, or other anorectal pathology.<sup>9</sup> Even though rare, a presacral mass should be ruled out by digital rectal examination. Adjunctive laboratory or radiological examinations are not routinely necessary.

## TREATMENT

### A. Nonoperative Management

- In the absence of an abscess, a trial of gluteal cleft shaving may be used for both acute and chronic pilonidal disease as a primary or adjunct treatment measure. Grade of Recommendation: Strong recommendation based on low-quality evidence, 1C.**

In both the adjunctive role to primary surgical treatment and as a measure to prevent recurrence, shaving (along with hygiene enforcement and limited lateral incision and drainage of abscesses) has been shown to result in fewer total hospital admission days, fewer total surgical procedures, and earlier return to work in comparison with a variety of more invasive surgical techniques.<sup>10</sup> Shaving along the intergluteal fold and surrounding region has also been used as a standard component of the postoperative treatment comparing various surgical techniques.<sup>9,11,12</sup> Although this limits the ability to determine its exact contribution to overall healing, shaving has clearly been safe with, at most, minimal additional morbidity. The most effective frequency and extent of shaving have yet to be clarified, because most series have used an arbitrary man-

ner and method for this practice. Similar to shaving, successful results have been demonstrated for laser epilation in the setting of both primary and recurrent pilonidal disease,<sup>13–15</sup> although there is insufficient evidence to date to provide a general recommendation for this technique.

**2. Fibrin glue and phenol injection might be used in select patients with chronic pilonidal sinus disease. Grade of Recommendation: Weak recommendation based on low-quality evidence, 2C.**

The use of phenol solution involves one or more injections into the sinus tract until filled, with cautious protection of the surrounding normal skin, removal of sinus hairs and debris with forceps, as well as local shaving. Small series have demonstrated success rates ranging from 60% to 95%.<sup>16–19</sup> Even in the setting of recurrent chronic sinus disease, phenol injection and local depilatory cream application on a weekly basis have shown low subsequent recurrence rates (0%–11%) at extended follow-up.<sup>20,21</sup>

Fibrin glue has been used in a variety of manners: after simple curettage of the tracts,<sup>22</sup> in the primary closure bed after excision,<sup>23</sup> and along the original sinus following lateral excision and primary closure.<sup>24</sup> Although the majority of the studies are small, healing rates of 90% to 100% are reported with minimal morbidity and low recurrence at early and moderate-length follow-up.

**3. Antibiotics have a limited role in the treatment of either acute or chronic pilonidal disease, although oral or intravenous agents may be considered in patients with significant cellulitis, underlying immunosuppression, or concomitant systemic illness. Grade of Recommendation: Strong recommendation based on low-quality evidence, 1C.**

The utility of antibiotics has been evaluated in 3 discrete situations: perioperative prophylaxis, postoperative treatment, and topical use. In the prophylactic role, limited data reported that an intravenous single dose before excision and primary closure of chronic pilonidal disease resulted in no difference in wound complication or healing rates in comparison with those not receiving antibiotics.<sup>25,26</sup> One small, randomized, blinded study comparing single-dose prophylactic metronidazole versus cefuroxime and metronidazole preoperatively followed by 5 days of oral Augmentin demonstrated no difference in wound infections at 1 week (although higher rates of wound infections at weeks 2 and 4 for the single-dose group).<sup>27</sup> No difference in overall wound healing was identified in a comparison of 1- and 4-day courses of perioperative metronidazole and ampicillin following excision and primary closure.<sup>28</sup>

In the postoperative setting, antibiotics have shown mixed results, although large-scale data are lacking. As an adjunct to primary excision in chronic pilonidal disease comparing those left to heal by secondary intention, fol-

lowing primary closure, or undergoing primary closure plus 2 weeks of clindamycin therapy, there was no difference in healing or recurrence rates with the addition of clindamycin.<sup>29</sup> Of the 3 groups, only secondary intention was associated with delayed healing. On the other hand, the addition of metronidazole for 14 days or metronidazole with erythromycin following excision and secondary intention wound healing of a chronic pilonidal sinus tract showed a slightly shorter healing time for the antibiotic group than those without antibiotics.<sup>30</sup> In addition, there was no difference in wound healing with the double-coverage erythromycin therapy. Additional studies using longer durations of a variety of single- and double-coverage antibiotic regimens have failed to demonstrate any clear advantage.

Limited and somewhat conflicting data currently exist on the use of topical antibiotic regimens in the treatment of pilonidal disease. One report demonstrated significantly higher wound-healing rates (86% vs 35%,  $p < 0.001$ ) after excision of chronic disease or previously drained acute pilonidal abscess and packing with an absorbable gentamicin-impregnated collagen-based sponge with overlying primary wound closure than those without the antibiotic packing.<sup>31</sup> Unfortunately, the contributions of the gentamicin could not be separated from the potential role of the sponge material itself. A more recent study comparing primary closure over a gentamicin-soaked sponge versus secondary healing showed quicker healing and lower overall cost to the closed group.<sup>32</sup> Finally, a third study investigating the effectiveness of the gentamicin sponge concluded that there was no benefit to closure over the sponge versus closure without it.<sup>33</sup> Other data have shown no clear benefit to a variety of topical antimicrobial strategies.

Overall, the utility of antibiotics in topical or systemic formulations remains unclear. Adjunctive use should be considered in the setting of severe cellulitis, underlying immunosuppression, or concomitant systemic illness, despite limited evidence in this specific venue.<sup>7–9,34</sup>

## **B. Operative Management**

**1. Patients with acute pilonidal disease characterized by the presence of an abscess should be treated with incision and drainage regardless of whether it is a primary or recurring episode. Grade of Recommendation: Strong recommendation based on moderate-quality evidence, 1B.**

For a pilonidal abscess with or without associated cellulitis, the mainstay of treatment is adequate surgical drainage. Following simple incision and drainage for first-episode acute pilonidal abscesses, overall successful healing has been reported to be ~60%, whereas the remaining patients required a second definitive procedure to address excess granulation before wound closure.<sup>35</sup> Drainage of the ab-

cess is not necessarily curative of the underlying disease process. Recurrent disease after complete healing occurs in approximately 10% to 15%, with the presence of multiple pits and lateral sinus tracts corresponding to higher recurrence rates. In 1 report, the overall cure rate at a median follow-up of 60 months was 76%.<sup>35</sup>

In a randomized trial of patients with acute abscesses undergoing incision and drainage with or without curettage of the abscess cavity and removal of the inflammatory debris,<sup>36</sup> curettage was associated with significantly greater complete healing at 10 weeks (96% vs 79%,  $p = 0.001$ ), and lower incidence of recurrence up to 65 months postoperatively (10% vs 54%,  $p < 0.001$ ). The use of local excision of both the abscess and the midline pits during the treatment of the acute pilonidal abscess, allowing healing by secondary intent as a way of eliminating all potential for future disease, has not been shown to alter recurrence rates, length of hospital stay, or overall time of healing.<sup>37</sup>

**2. Patients who require surgery for chronic pilonidal disease may undergo excision and primary repair (with consideration for off-midline closure), excision with healing by secondary intention, or excision with marsupialization, based on surgeon and patient preference. Drain use should be individualized. Grade of Recommendation: Strong recommendation based on moderate-quality evidence, 1B.**

Chronic disease can encompass recurrent abscesses with interval periods of complete resolution or a persistent nonhealing, draining wound. The surgical treatment of chronic pilonidal disease is generally divided into 2 categories: excision of diseased tissue with primary closure (including various flap techniques) versus excision with a form of healing by secondary intention (including marsupialization).

In the comparison of excision with primary midline closure versus excision with healing by secondary intention, there is a uniform significant trend toward faster median healing rates (range, 23–65 days) following primary closure in multiple prospective, randomized trials.<sup>25,38–42</sup> In addition, there is some evidence to indicate a more rapid return to work following primary closure.<sup>39,41,43</sup> Despite these benefits, the 2010 Cochrane systematic review demonstrated no obvious advantage comparing open healing versus surgical closure,<sup>44</sup> although the open group had lower recurrence rates (relative risks, 0.42; 95% CI, 0.26–0.66). This is offset by nonpooled data demonstrating significantly longer healing times for open groups (range, 41–91 days) versus primary closure (range, 10–27 days). For patients who underwent surgical closure, there was a clear advantage to off-midline closure in comparison with midline closure. Eleven individual studies, including 9 that directly compared midline primary closure with open healing, demonstrated an estimated 60% reduction

in the risk of recurrent disease after healing by secondary intention in comparison with primary closure after excision.<sup>29,39–41,43,45–50</sup>

Limited and conflicting data are available directly comparing the efficacy of excision with marsupialization to primary closure; primary closure, in general, is associated with improved healing times with higher recurrence.<sup>11,48,51</sup> The 1 principle that seems to provide a clear benefit is to close the wound off-midline rather than direct midline when performing primary repair. This has consistently demonstrated faster healing times, lower rates of wound morbidity, and lower recurrence rates.<sup>52–56</sup>

Drain use has been described following primary closure, both for removing effluent and irrigating the wound bed.<sup>57</sup> One nonrandomized study in chronic pilonidal disease found that drain placement following primary closure was associated with lower rates of complete wound dehiscence and faster rates of healing, although recurrence rates were similar.<sup>58</sup> Additional case series using mostly suction drains for 2 to 6 days following primary closure demonstrated low complication rates (0%–10%), with no morbidity directly attributed to the drain, and >85% rate of healing.<sup>57,59,60</sup> When used in conjunction with flap techniques, drains are most commonly associated with a decreased incidence in wound fluid collections, but no difference in wound infections or recurrence rates.<sup>61–64</sup> Drain use may be considered on a case-by-case basis per surgeon preference.

**3. Flap-based procedures may be performed, especially in the setting of complex and multiple-recurrent chronic pilonidal disease when other techniques have failed. Grade of Recommendation: Strong recommendation based on moderate-quality evidence, 1B.**

In the setting of chronic pilonidal disease, often with multiple previous surgical treatments, several flap-based treatment strategies excise the disease while simultaneously providing healthy tissue coverage of the defect. In some settings, soft tissue reconstruction with the intent of altering the contour of the natal cleft as a measure to reduce further disease recurrence has been attempted in both the primary and recurrent states.<sup>65</sup>

The rhomboid or Limberg flap, in which all sinuses are excised down to the presacral fascia, with rotation of a fasciocutaneous flap that results in flattening of the gluteal cleft, has been used extensively in the treatment of refractory pilonidal disease. Overall results are favorable with respect to disease recurrence (0%–6%) and patient tolerance.<sup>52,53,66–68</sup> Data from randomized trials found low (0%–6%) overall rates of surgical site infections.<sup>52,53,55,68</sup> Additional data indicate significantly lower recurrence after rhomboid flap versus V-Y advancement, although no differences in wound complications, seroma formation, or hospital admission duration.<sup>69</sup>



The Karydakís flap uses a mobilized fasciocutaneous flap secured to the sacrococcygeal fascia with lateral suture lines. Karydakís reviewed his personal series of more than 6000 patients treated with this technique in 1992, with a recurrence rate less than 2% and wound complications in 8%.<sup>5</sup> More recently, prospective nonrandomized data reported wound complications in 7% and recurrence in <1%.<sup>59</sup> Similar findings have been reported in case series by using this technique (<5% recurrence; 9%–21% local complication rate),<sup>70,71</sup> with additional data demonstrating both smoking and obesity to be predictors of wound complications.<sup>72</sup> In the single randomized, controlled study comparing the Karydakís procedure with open healing, the Karydakís repair resulted in a 6% recurrence rate, 20% wound morbidity, and 98% overall healing rate at a follow-up of 3 years.<sup>50</sup>

Two recent randomized trials have evaluated differences between the Limberg and Karydakís flaps.<sup>73,74</sup> The 2 flap procedures seem to be relatively equal clinically, but the Karydakís flap had a higher infection rate in 1 study.<sup>74</sup> The Karydakís flap is generally felt to be an easier procedure to learn.

The cleft-lift technique also creates a flap-based coverage with closure off the midline, obliterating the cleft altogether. Bascom and Bascom<sup>75</sup> reported successful healing in all patients in a series of 28 recurrent complicated pilonidal presentations. His follow-up study of 69 patients specifically with refractory pilonidal disease in nonhealing wounds reported a 96% healing rate.<sup>65</sup> Additional case series have confirmed healing rates of over 80% to 95% in both the primary and recurrent settings.<sup>76–78</sup> Randomized data demonstrated slightly higher recurrence rates of 12%.<sup>56</sup> Additional data have used the cleft-lift in the primary setting as well, with improved rates of healing and similar rates of recurrence as Bascom's other technique of lateral incision and drainage with midline pit excision and closure.<sup>79</sup>

Several other flaps have been used for pilonidal disease including the V-Y advancement and Z-plasty techniques. Minor wound complications, > 90% healing, and low disease recurrence have been reported in case series of patients managed with V-Y advancement.<sup>80–82</sup>

### C. Management of Recurrent Pilonidal Disease

**1. Operative strategies for recurrent pilonidal disease should distinguish between the presence of an acute abscess (section B1) and chronic disease (section B2), taking into account the experience and expertise of the surgeon Grade of Recommendation: Strong recommendation based on low-quality evidence, 1C.**

Although recurrence remains a common problem, as evidenced by the recurrence rates for various surgical procedures listed in these guidelines, there remains a relative

paucity of evidence to specifically guide the treatment of recurrent disease. Factors such as the presence of an acute abscess or chronic inflammation, as well as prior treatments (ie, previous flaps), will help in the decision-making process. Randomized data that included only patients with recurrence undergoing a modified asymmetric flap compared with a classical rhomboid flap demonstrated a lower wound infection rate (3% vs 23%), lower recurrence rate, shorter hospital stay, and faster return to work by using the asymmetric flap.<sup>83</sup> Other randomized data, including both de novo and recurrent patients, likewise highlighted that success is feasible when using various flaps,<sup>48,54</sup> excision with primary closure, as well as excision with secondary intention methods<sup>29,49</sup> for these difficult patients. However, because recurrent presentations may herald a different problem, the surgeon needs to remain vigilant to exclude abnormal underlying causes of chronic perirectal pathology, including IBD, immunosuppression, and cutaneous neoplasms.

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