

Simple day-case surgery for pilonidal sinus disease

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Background: Pilonidal disease is a common and usually minor disease. Although wide excisional surgery has been common practice, there are more simple alternatives. This review focused on the aetiology and management of pilonidal disease.

Methods: A comprehensive review of the literature on pilonidal disease was undertaken. MEDLINE searches for all articles listing pilonidal disease (1980–2010) were performed to determine the aetiology and results of surgical and non-surgical treatments. Single papers describing new techniques or minor modifications of established techniques were excluded. Further articles were traced through reference lists.

Results: Patients with minimal symptoms and those having drainage of a single acute abscess can be treated expectantly. Non-surgical treatments may be of value but their long-term results are unknown. There is no rational basis or need for wide excision of the abscess and sinus. Simple removal of midline skin pits, the primary cause of pilonidal disease, with lateral drainage of the abscess and sinus is effective in most instances. Hirsute patients with extensive primary disease and deep natal clefts, or with recurrent disease and unhealed midline wounds, may also require flattening of the natal cleft with off-midline skin closure. These more conservative procedures are usually done as a day case, require minimal care in the community and are associated with a rapid return to work. They also avoid the occasional debilitating complications of surgical treatment.

Conclusion: Simple day-case surgery to eradicate midline skin pits without wide excision of the abscesses and sinus is rational, safe and effective for patients with pilonidal sinus disease.

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Introduction

Pilonidal disease, first described in the 19th century^{1–4}, is common⁵, especially in the army^{6–8}. It is a minor condition for the majority of patients but can cause pain and sepsis resulting in time off work and school.

Over the past 70 years some surgeons have avoided wide *en bloc* excision^{9–16} because of the risk of debilitating complications, whereas other surgeons still use these techniques^{17,18}. Surgical treatment of pilonidal disease should now infrequently require hospital admission. However, 7000 patients were admitted for a mean stay of 5 days (35 000 bed days) to hospitals in England in 1985, and 11 534 patients were admitted in England and Wales in 2001 with a mean hospital stay of 4.3 days (49 596 bed days)¹⁹. In the 1980s 40 000 patients with pilonidal

disease in the USA spent 208 000 days in hospital and it was estimated that avoiding hospitalization could save US \$40 million per year²⁰. The time spent in hospital was a dominating factor in the evolution of treatment for this disease and it continues to have significant economic consequences¹⁹.

During World War II (1939–1945), when it was extremely important to have combat-ready men, almost 78 000 soldiers, the equivalent of five army divisions, were admitted to US Army hospitals for pilonidal disease and remained in hospital for a mean of 55 days^{7,21}. Hospital stay for pilonidal disease in the US Navy in 1940 was equal to that for hernia and syphilis⁸, and 2075 USA naval patients were hospitalized for 90 392 days in 1965–1966²². Over a 2-year period in the 1990s in one Army Centre in the USA, 240 excisional operations were performed in

a group of 229 patients, who required 4760 occupied-bed days, a mean of 21 days per patient¹⁶. These long hospital stays were partially explained by soldiers being discharged only when they were fit for duty¹⁶. The results of surgery were so poor that some US military surgeons banned all surgical treatment for this condition, first during World War II, then again in 1967¹⁶.

Of 4670 Greek Army candidates operated on for pilonidal disease almost half (2288) had recurrent disease²³. Bad failures after surgery can result in a long time off school or work, in-hospital stays of up to a year¹⁵, wounds being packed for 15 months²⁴, unhealed wounds for up to 37 years^{25,26}, multiple (up to 13) operations²⁶, split-skin grafts²⁷, and reconstructive surgery using muscle flaps and even radiotherapy^{25,28}. Although treatments may have improved^{17,18}, for some patients the complications of surgery remain worse than the primary disease^{29,30}.

Methods

A comprehensive review of the literature on pilonidal disease was done. MEDLINE searches for all articles from 1980 to 2010 listing pilonidal disease were performed to study the aetiology of the disease as well as the reasons for the development of the various methods of conservative and surgical treatments. Single papers describing new techniques or minor modifications of established techniques and single case reports were not included. Further articles were traced through reference lists. Patients with pilonidal disease present with abscesses, sinuses, fistulas and cysts, but for simplicity all of these are termed abscesses. Although there are great variations in the severity of disease, this is usually described in terms of the number of times patients have had previous surgery, which makes comparisons between non-randomized studies difficult.

Aetiology of pilonidal sinus disease

The first patient reported as having pilonidal disease in 1833 was cured by simple opening of the tract without its excision¹. In 1847 it was described as being caused by hair³¹. The suggestion that the disease had an embryological origin⁴ led to wide excisional surgery and the idea that recurrence is due to inadequate excision. However, it is now recognized that pilonidal disease is an acquired, self-limiting condition that develops around puberty^{9,32,33}. Risk factors for pilonidal disease include age between 18 and 30 years^{34–36} (it is rarely seen in younger or older patients^{25,36–38}), male sex^{23,35,36}, hairiness^{12,23,35,36}, obesity and a deep natal

cleft^{11,12,23,34}, and poor hygiene (it has been called 'Jeep seat' or military disease)^{23,24,36,37}. Although common in Mediterranean countries, it is rare in East Asia, Oceania and sub-Saharan Africa.

In 1947 King³² suggested that acquired midline skin pits were the primary aetiological factor in pilonidal disease and that these developed from hair follicles or skin crypts. This was based on a detailed pathological study of the evolution of the disease from its earliest stages as enlarged hair follicles or skin crypts, through to primary and secondary sinuses and abscesses (*Fig. 1*). Bascom²² repeated the pathological study and confirmed these findings in 1980. The universal presence of midline skin pits in all patients with pilonidal disease has been emphasized by Millar³⁹, Lord⁴⁰ and Bascom²².

Enlargement of the hair follicles^{22,32} or skin crypts³² may be due to the tethering and selective stretching of the skin in the midline^{22,32,35,39–41}, inflammation of the skin in the cleft³², and blockage of hair follicles similar to the changes observed in acne⁴². Karydakis⁴³ and Bascom²⁵ have observed that, following 'advancing flap' operations, the skin in the depth of a 'new natal cleft', but not elsewhere, may develop the characteristics of a vulnerable raphe with widened pores of hair follicles and maceration of the skin, increasing the risk of developing recurrent disease. The direction of the skin pit and sinus tracks is always the same as the direction of hair growth in follicles surrounding the pits³⁹.

It has been suggested that the development of an acne type of folliculitis^{44,45} in the enlarged hair follicle may be an important first event in the development of an abscess, which is perpetuated by the entry of skin debris and loose hairs into the skin pits. This is facilitated by the movement of the buttocks^{35,46} and the barbed nature of the hairs^{47,48}, which may pass right through to be extruded out of a secondary opening⁴³. Tips of hairs can also dip into the midline skin pit while still attached to their roots³². On the basis of extensive studies, Karydakis⁴³ concluded that 'hair insertion' (penetration of the skin by hairs) is the most important factor in the development of the disease. Brearley³⁵ suggested that the hairs puncture intact skin and drill through the subcutaneous tissue to cause the skin pits and abscesses, as may happen in barbers' interdigital pilonidal sinuses^{9,49}. However, as up to 50 per cent of patients with natal cleft pilonidal disease may not have hairs in the sinus or abscess^{10,39,50}, and the hair in those that do may not come from the patient^{51,52}, it is likely that hairs are important secondary factors rather than the primary cause of the disease^{20,32,53}.

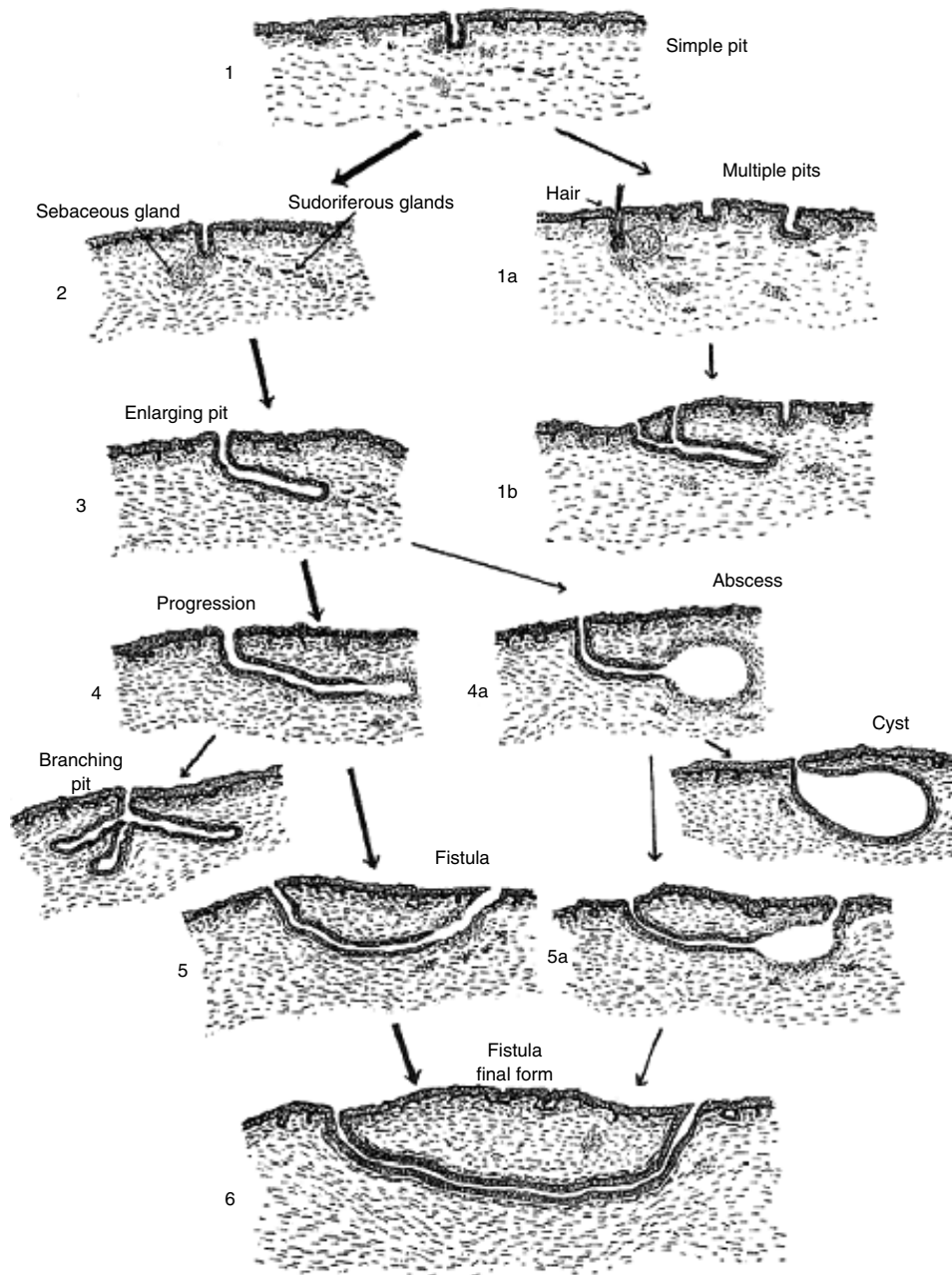


Fig. 1 (1) Simple pit of epithelium. (1a) Multiple pits that arise either in hair follicles or as a depression independently of follicles or glands. (1b) With deepening of the crypt two adjacent ones may join. (2) Sebaceous and sudoriferous gland activity. Pits may enlarge by dilatation of these, but in any case extend along the line of gland proliferation. (3) Enlargement of pit and extension into deeper tissues. (4) Infection occurs at the deep part of the pit and here an abscess often develops; this may discharge into the sinus but may form a large abscess. The pit may branch in various directions. (4a) Epithelialization of an abscess cavity gives rise to an epithelium-lined cyst. (5) Infection spreads through the skin at another point and a fistula is formed. This begins to epithelialize and may become complete (6). The fistula may also develop as the result of rupture of an abscess (4a to 5a). Figure reproduced from King³² with permission from the publisher

Unhealed midline wounds after surgical treatment

Although unhealed midline wounds may be uncommon, they are the *bête noire* of pilonidal surgery. These, together with recurrent disease, numbers of postoperative wound complications and time to complete healing of open or dehisced sutured wounds, are the factors that need to be measured to compare different modalities of treatment. Very few studies have recorded all these parameters¹⁷, particularly the frequency of unhealed midline wounds and the number of operations needed to achieve complete healing. Accurate measurement of these parameters requires long follow-up of large groups of patients. In small studies with short follow-up, there is a risk of under-reporting the most significant and debilitating complications of pilonidal disease surgery³⁰. It is difficult to draw firm conclusions from comparisons between different modalities of surgical treatment without this information, which is often absent even within randomized trials^{17,18}.

Current methods of treating pilonidal disease

The nature of the presentation of pilonidal disease and its severity should determine the way it is managed⁵⁴.

Non-surgical treatment

It is reasonable in patients with inactive asymptomatic pits or nodules to advise a watch-and-wait policy. Non-surgical treatment for active disease by careful perianal hygiene and shaving was introduced in 1947 because of the prolonged disability to service personnel during the war from surgical treatment¹². Three other studies^{16,55,56} have confirmed low subsequent surgery rates in over 170 patients treated conservatively. Removal of hairs is an important part of all treatments and various depilation methods have been used over the years^{55,57}. Injections with sclerosants have been used since the first descriptions of pilonidal disease². Phenol injections achieve cure rates of over 70 per cent^{58–64} without surgery and excision of the abscess.

Simple surgical procedures without wide excision of abscesses

In one study, over half of the 73 patients who presented for the first time with an acute abscess healed completely after simple drainage⁶⁵. Many of these patients (42 of the 73) had no further problems over the next 5 years. This and another study⁶⁶ show that many patients presenting with

an acute abscess can be cured without excising the abscess or skin pit.

In 1935^{10,54} non-excisional surgery was used to treat 618 patients with chronic disease by simple laying open of the abscess and sinus, and marsupialization of the wound⁵⁴. Using the same technique^{67–71}, including a recent large study⁷¹, similar results were achieved with a recurrence rate of 1–6 per cent in 441 patients followed up for 1–10 years. Using the same technique without marsupialization, a further 815 patients had similar results and a 5 per cent recurrence rate^{13,21,72,73}.

In the 1960s Lord and Miller⁵³ simplified non-excisional surgery by cleaning the sinuses with a nylon bristled brush without laying them open, and for the first time formally excised the skin pits through tiny midline incisions (*Fig. 2*). Bascom²² emphasized the importance of excising the skin pits but cleaned the abscesses through a lateral incision away from the midline (*Fig. 3*). The volume of tissue removed with each pit should be no greater than a grain of rice⁷⁴. The overall aim of this procedure is simply to 'pick the pits' through small midline incisions and 'stay out of the ditch'⁷⁵ – the natal cleft. In a recent study of 1435 patients the midline pits and secondary openings were simply cored out using skin trephines and the abscesses were cleaned out through the trephines, which were left unsutured. There was a 16.2 per cent recurrence rate with a mean follow-up of 6.9 years⁷⁶.

The relatively high recurrence rates after simple excision of skin pits^{11,53,76–79} (*Table 1*) is tempered by the ease and success^{11,22} of a repeat procedure; this means that, although one operation may cure fewer

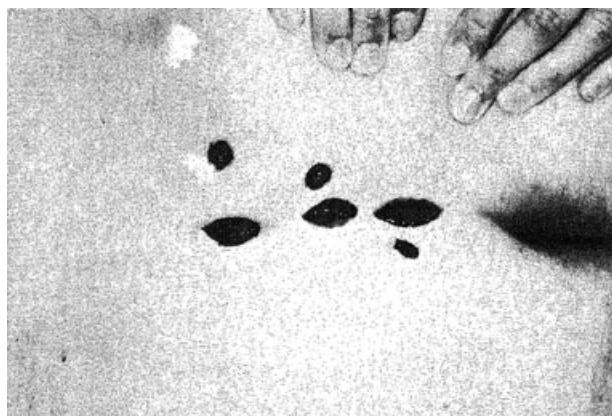


Fig. 2 First description of simple excision of skin pits (figure reproduced from Lord and Millar⁵³ with permission from the publisher). Complicated pilonidal sinus. This patient had had symptoms for many years. There were three groups of midline pits and three lateral tracts. Healing was obtained without further surgery



Fig. 3 Excision of four skin pits and a lateral incision for drainage and cleaning of the abscess cavity and sinus

than 85 per cent of patients, a second finally cures over 95 per cent of all patients. Open wounds are the other disadvantage of these procedures. However, as 50 per cent of the lateral wounds after a Bascom procedure were completely healed at 3 weeks, 99 per cent by 3 months and all by 4 months⁷⁹, and patients can be self-caring in the community, the open lateral wound does not greatly delay return to work, which may be the day after surgery^{11,76}; however, this is not always achieved⁷⁹.

Wide excision of the abscess with or without midline skin closure

‘... wide block resection and primary closure for pilonidal sinus disease ... was based on the concept that this disease

has a congenital origin. Most surgeons have long since discarded the theory of a congenital origin ... yet cling to the surgical procedure that was based on the erroneous theory ...’

Julian Rickles (1974)¹³

In spite of wide excision of the abscess being banned¹⁶ and abandoned^{10,12} by some surgeons, it is still used by others^{17,18,80}, perhaps because, by meticulous attention to surgical technique and good postoperative hygiene, poor results are less frequent¹⁷. Unfortunately this is not universally achieved and some centres continue to see the debilitating complications from this type of surgery, including unhealed midline wounds^{74,75,81–83}. There is no firm evidence that wide excision of the abscess is the only cause of unhealed midline wounds and there is little information on the frequency with which they occur, although it may be as high as 2–7 per cent^{84,85}. However, as unhealed wounds mostly occur in the midline and as pilonidal disease is caused by the environment created by the natal cleft, it is likely that there will be a higher risk of this complication and recurrent disease if long midline wounds, sutured or unsutured, are created, as occurs after many wide excisional procedures.

Systematic reviews^{17,18} confirm the conclusions of many previous non-randomized studies of wide excisional techniques that, although time to complete healing may be quicker after midline closure, recurrence rates can be as high as 22–41 per cent^{29,30} compared with around 6 per cent with the simple lay-open non-excisional procedures^{54,67–73,86}.

Table 1 Publications on Lord–Millar and Bascom procedures

Reference	Study interval	No. of patients	Wound complications (%)	Anaesthesia	Hospital stay	Time off work (days)	Mean time to wound healing (weeks)	Mean follow-up (months)	Recurrence*
Lord and Millar ⁵³	1962–1963	33	3	LA	DC			6–24	1 of 33 (3)
Edwards ⁷⁷	1971–1976	120		LA/GA	DC (50%) 1–2 days (50%)	10	39	< 60	5 of 62 (8)‡
Bascom ²² †	NS	50		LA	DC	1 (50%)	3	24	4 of 50 (8)§
Bascom ¹¹	NS	161		LA	DC (4% overnight)	1	3	42	27 of 161 (16.8)¶
Mosquera and Quayle ⁷⁸	1991–1993	41		GA	2 days (9 DC)	NS	< 8	10.6	3 of 41 (7)
Senapati <i>et al.</i> ⁷⁹	1992–1999	218	8	LA (84%)	DC	< 14	4	12.1	21 of 218 (9.6)
Gips <i>et al.</i> ⁷⁶	1993–2003	1435	< 1.5	LA	DC	0 in 59%	3.4	82.8	189 of 1435 (13.2)
Summary of 6 studies	1962–2003	2008	2–8	LA	DC	0–14	4–8	10–83	246 of 1950 (12.6)

*Values in parentheses are percentages. †Not included in summary. ‡Completed treatment and complete follow-up. §All had repeat operations with no recurrence. ¶At 5 years. LA, local anaesthetic; DC, day case; GA, general anaesthetic; NS, not stated.

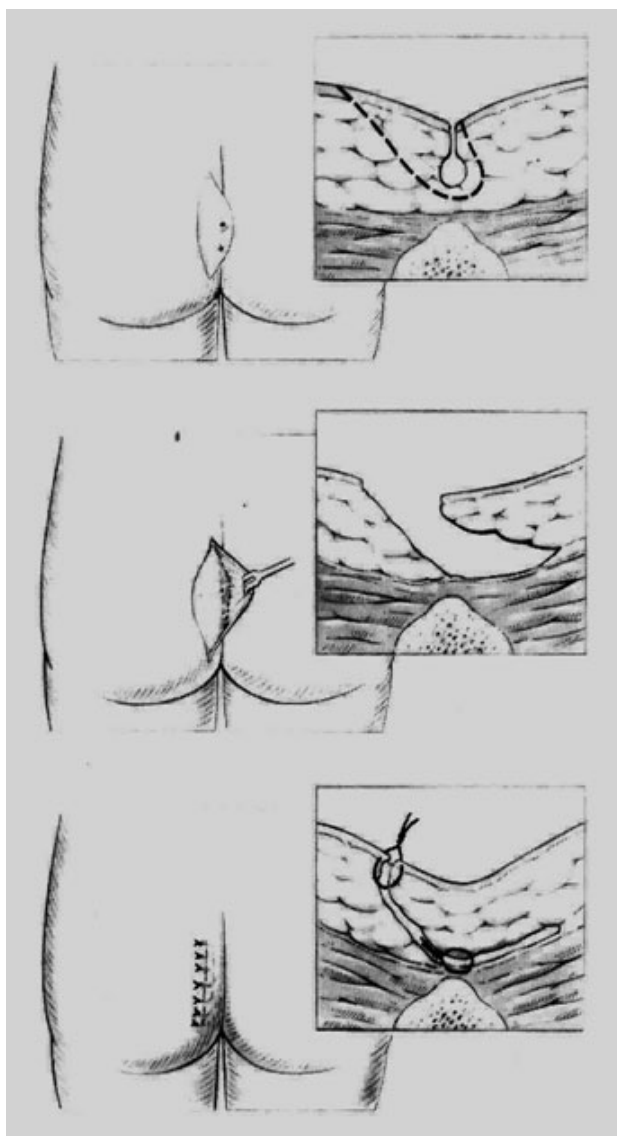


Fig. 4 Diagrammatic representation of the Karydakis procedure showing excision of abscess and sinus together with skin, mainly from one side of the cleft, and off-centre skin closure. Reprinted from *The Lancet*, Vol. 2, Karydakis GE, New approach to the problem of pilonidal sinus, pp. 1414–1415, 1973²³, with permission from Elsevier

Off-midline skin closure with and without wide excision of the abscess

Two systematic reviews^{17,18}, which included an analysis of six randomized controlled trials (RCTs)¹⁷, concluded that off-midline (rather than midline) skin closure should become standard management after wide excision of the abscess⁸⁷.

The Karydakis off-midline flap procedure was developed ‘to place new resistant skin to the depth of the intergluteal fold to prevent hair insertion, and therefore recurrent disease’²³. This is achieved by an elliptical asymmetrical wide excision of skin, abscess and sinus, mobilizing the skin edge closest to the midline to produce a thick flap, which is then sutured to the side furthest away from the midline. The deep surface of the flap is transfixed to the underlying sacrococcygeal fascia (*Fig. 4*)²³. Karydakis records that other surgical techniques create a wound at the depth, which becomes an open portal of entry situated at the target point of hair insertion²³. In a study by Karydakis⁴³ from 1966 to 1990 on 7471 patients, 95 per cent of whom were followed up for 2–20 years, the mean time in hospital ranged from 1 to 3 days. The majority healed rapidly with a mean time off work of 9 days and 75 (1.0 per cent) developed recurrence (*Table 2*).

Kitchen’s^{88,89} and Bascom’s^{25,26,83} modifications of the Karydakis technique use thinner skin flaps and the Bascom ‘cleft lift’ procedure avoids any excision of the abscess or secondary openings (*Figs 5–7*). If the abscess wall is rigid, it is ‘cubed’ to allow it to collapse. Secondary openings of the abscess well away from the midline do not need to be included in the excision wound. They will heal following eradication of the primary midline skin pits if their openings are slightly enlarged for drainage and the tracks leading to them are cleaned of hairs and debris. Whereas the Karydakis procedure incidentally flattens the natal cleft, one of the main aims of the Bascom modification is partially to close or flatten it so that skin closure is closer to the surface as well as off the midline (*Fig. 8*)³⁴. Although Karydakis procedures^{25,88,89} were initially carried out under general anaesthesia, the modified techniques are increasingly being done under local anaesthesia as a day case.

The number of publications on the Karydakis procedure^{94–105} in the past 5 years demonstrates its increasing popularity and most report similarly good results (*Table 2*), apart from one RCT¹⁰⁵ that has shown a higher wound infection rate after this procedure compared with a Limberg flap (26 versus 8 per cent). Although 4–26 per cent of patients have wound complications, including skin necrosis, infections, seromas, haematomas and wound dehiscence, most of these can be managed on an outpatient basis (*Table 2*). Complete wound healing occurs within 1 week in 60–70 per cent of patients, most require minimal care in the community and return to work in 1–4 weeks, and the debilitating complications of surgery

Table 2 Publications on Karydakis operations and its modifications

Reference	No. of patients	Wound complications (%)	Anaesthesia	Mean hospital stay (days)	Time off work (weeks)	Mean time to complete wound healing (weeks)	Mean follow-up (months)	Recurrence*
Karydakis ²³ †	1687	8.5	GA	8.2	NS	NS	NS	8 (0.5)
Karydakis ⁴³ †	7471	8.5	GA	1–3	1.3	NS	2–20 years (range)	75 (1.0)
Bascom ²⁵ †	30	20	GA/SA	DC	0.5	NS	20	3 (10)‡
Bascom and Bascom ²⁶ † (M)	27	10	GA	DC	NS	17 months§	20 (median)	0 (0)
Bascom and Bascom ⁸³ (M)	69	4	GA/SA	DC	NS	NS	30	8 (12)‡
Kitchen ⁸⁸ †	45	9	GA	> 4	3–4	Short	5–60 (range)	2 (4)
Kitchen ⁸⁹ (M)	141	9	GA	4	4	Short	22	5 (3.5)
Anyanwu <i>et al.</i> ⁹⁰	28	3	GA	4	NS	Short	36	0 (0)
Patel <i>et al.</i> ⁹¹	50	NS	NS	7	NS	3 (median)	21	0 (0)
Akinci <i>et al.</i> ⁹²	112	6.4	NS	2.6	1.8	2	53	1 (0.9)
Sakr <i>et al.</i> ⁹³	41	10	SA	3	NS	Short	13	1 (2)
Gurer <i>et al.</i> ⁹⁴	50	20	SA	2.5	NS	NS	21	0 (0)
Abdul-Ghani <i>et al.</i> ⁹⁵	51	12	GA	DC	NS	Short	24 (approx.)	8 (16)
Morden <i>et al.</i> ⁹⁶	24¶	8	GA	DC	NA	NS	48	0 (0)
Kulacoglu <i>et al.</i> ⁹⁷	14	7	GA/SA	2	NS	Short	16	0 (0)
Anderson <i>et al.</i> ⁹⁸	51	20	GA	DC	3	3	13	0 (0)
Keshava <i>et al.</i> ⁹⁹	70	8	GA	NS	NS	2.4	36	3 (4)
Rushfeldt <i>et al.</i> ¹⁰⁰	33	24	LA	DC	1.5	NS	17	5 (15)
Bessa ¹⁰¹	82	7	SA	2	NS	NS	20	0 (0)
Abdelrazeq <i>et al.</i> ¹⁰²	70	20	NS	NS	2	NS	24 (median)	1 (1)
Nordon <i>et al.</i> ¹⁰³	26	19	GA/LA	DC	2	1–5	36	0 (0)
Senapati <i>et al.</i> ¹⁰⁴	150	14	GA/LA	DC	NS	2–64#	13.5	8 (5.3)
Ersoy <i>et al.</i> ¹⁰⁵ †	50	26	SA	2	2	Short	Short	NS
Summary of 17 studies ^{69,89–104}	1062	3–24	GA mainly	DC mainly	1.5–4	1–64	26	41 of 1062 (3.9)

*Values in parentheses are percentages. †Not included in summary. ‡Includes recurrent disease and unhealed midline wounds. §Within 1 week in 70 per cent of patients. ¶Children. #Sixty per cent primary wound healing. GA, general anaesthetic; NS, not stated; SA, spinal anaesthetic; DC, day case; M, modified Karydakis; LA, local anaesthetic; NA, not applicable.



Fig. 5 Outline of the skin for excision to include the midline skin pits and skin, mainly from the diseased side of the natal cleft. The outer lines mark where the skin at the outer rim of the cleft naturally meets when the patient is in the standing position

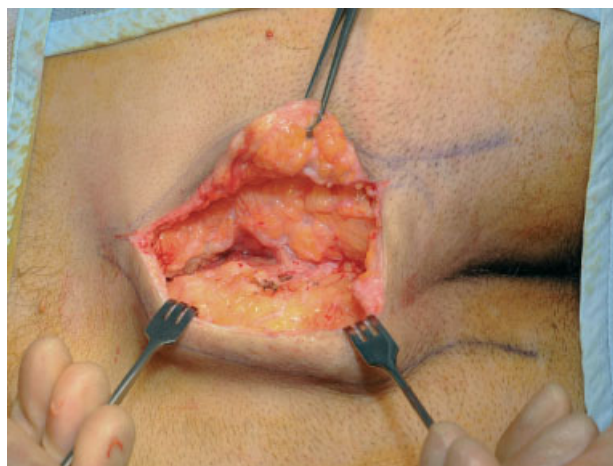


Fig. 6 After excision of the skin pits and skin, mostly from one side of the natal cleft, the skin flaps are mobilized off the fat in the natal cleft and retracted to clean but not excise the abscess wall. The skin is sutured after allowing the exposed fat from each side of the natal cleft to fall together over the abscess cavity to flatten the cleft



Fig. 7 A well lateralized healed wound with new healthy skin in the midline

for pilonidal disease have not been reported after this technique.

A randomized trial of Bascom's two operations in patients with primary disease showed better results with the cleft lift procedure than with the simpler pit-picking operation¹⁰³. The cleft lift procedure may be the best operation for more extensive disease in hairy patients with deep natal clefts.

More complex skin flap procedures after wide excisional surgery

Although good results have been achieved after Z/V-Y-plasties and rhomboid/Limberg flaps^{106–118}, two RCTs suggest that V-Y and Limberg flap procedures are not superior to a simple primary closure technique¹¹⁹ or laying open with marsupialization¹²⁰. These more complex flap procedures include excision of the abscess, require general anaesthesia and a longer hospital stay, and have occasional complications that need further inpatient surgery. Overall, they offer little or no extra benefit to the modified Karydakis procedures and may be cosmetically disfiguring¹²¹.

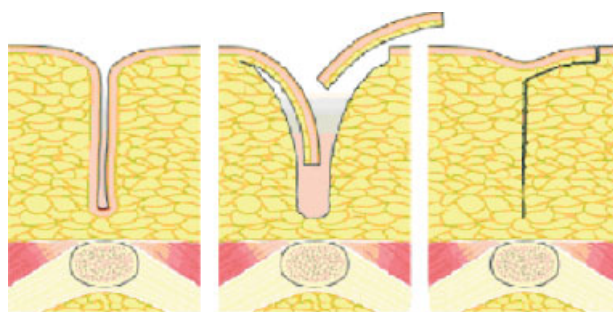


Fig. 8 Bascom's 'cleft lift' procedure showing flattening of the natal cleft to ensure that the skin closure is near to the outer rim of the cleft as well as being off centre. Reproduced from *Current Practice in Surgery*, vol. 6, J. U. Bascom, Pilonidal sinus, pp. 175–180, 1994³⁴, with permission from Elsevier and J. U. Bascom

Discussion

Patients with a shallow natal cleft and few hairs presenting with minimal symptoms from pilonidal disease, and those having drainage of a single acute abscess with uncomplicated disease, may not need any intervention and can be managed expectantly. Non-surgical treatments of pilonidal disease, such as phenol injections and simple shaving with careful natal cleft hygiene, may be of value for some patients but their long-term results are not known.

The early theories of a congenital cause of pilonidal disease led to wide *en bloc* excisional surgery, whereas the current theories of an acquired cause from midline skin pits suggest that simple surgery to eradicate the skin pits without excision of the abscess may suffice. Simple laying open of the sinus and tracts was developed to avoid the bad complications of excisional surgery; although it is associated with low recurrence rates, wounds may take a long time to heal. Although the Lord–Millar and other 'pit-picking' procedures may have fairly high recurrence rates, repeat procedures are equally simple and result in an overall cure in 95 per cent of patients who self-care in the community after surgery. Time to complete healing is rapid with a quick return to work. Although it may not be possible to do all procedures for pilonidal disease as a day case, this is more likely to be acceptable to the patient when the procedure is simple and has little postoperative pain, as with the Lord–Millar and Bascom operations.

More complex or recurrent disease with unhealed midline wounds requires a flap procedure that can achieve off-centre skin closure. Z and V-Y flap procedures after wide excision of the abscess have been successful in this situation but they require general anaesthesia, are more difficult to achieve as a day case and failures may be

difficult to correct. Their cosmetic outcome may also be unsatisfactory. In contrast, the modified Karydakís procedures such as the Bascom cleft lift operation, which avoids wide excision of the abscess, flattens the cleft and is increasingly done as a day case under local anaesthesia, has equally good long-term and better cosmetic results. Most of these patients, who heal quickly, self-care in the community. The success of non-excisional surgery and the theory that midline skin pits are the cause of pilonidal disease means there is now no rational basis or need for excision of the abscess or sinus in pilonidal disease.

However, the major benefit of these newer simpler procedures is that they do not cause the occasional debilitating complications of pilonidal surgery, probably by avoiding long sutured or unsutured midline wounds deep in the natal cleft.

Acknowledgements

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