Treatment of pilonidal sinuses in Denmark is not optimal

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ABSTRACT

INTRODUCTION: The standard treatments of chronic pilonidal sinuses PS were previously wide excision with primary midline closure or open treatment by non-specialist surgeons resulting in high rates of unhealed wounds and recurrences. An evidence-based shift from the now obsolete midline procedures towards off-line procedures seems to have occurred over the past 3-4 years. We decided to analyse the present state of PS treatment in Denmark.

MATERIAL AND METHODS: A questionnaire was sent to all public hospitals and private clinics potentially treating PS. It included questions on the volume of procedures, experience of surgeons, and methods of anaesthesia and procedures in different cases.

RESULTS: The questionnaire was answered by 37 departments (response rate 95%) in public hospitals and by 92 private clinics (response rate 84%). Off-midline closure was performed in 75% of the public departments, but some of these are also still performing midline surgery in some case. A total of 54% of the public departments are still performing midline surgery in some cases. Local analgesia is used in only 41% of the departments, and in 58% of these departments, local analgesia is used in fewer than 10% of the cases. In 11 (39%) departments, elective PS is performed by one or two surgeons, and there is a significant relation ($p = 0.033$) between low experience and large number of PS surgeons per department. Midline surgery seems to be performed in departments with more PS surgeons.

CONCLUSION: Too many surgeons are still performing obsolete midline surgery. National guidelines are needed. The number of cases treated under local analgesia is unsatisfactorily low.

The incidence of pilonidal sinus (PS) disease in Denmark and the methods of treatment are not being registered. Public and private hospitals are required to report to the National Patient Register, but an agreement with the National Health Service stipulates that small private clinics are not required to report their diagnoses and the treatment of their patients to the Register.

The National Patient Register holds no information on the types of procedure performed because until January 2010 the codes used by the Danish National Board of Health distinguished only between incision and excision. In most institutions in Denmark, the standard treatment for chronic PS has been classic wide excision with primary midline closure or open treatment with closure by secondary intention performed by non-specialist surgeons with limited experience. Alternative procedures such as Lord-Millar's brush method [1] and Karydakis' operation have only been used in a few institutions. Though poorly documented, the limited number of reported studies [2, 3] show that the results of PS treatment have generally not been acceptable. Rates of unhealed wounds and recurrences have been too high.

With the presentation at the annual meeting of the Danish Surgical Society in 2007 of the first Danish results of Bascom's cleft-lift procedure and their subsequent publication [4], treatment of PS has caught the attention of surgeons in Denmark. Several articles [5-7] in Danish have been published, including a survey of the Cochrane review published in 2007 [8]. This review has recently been updated. It showed no clear benefit of open healing over surgical closure. A clear benefit was shown in favour of off-midline rather than midline wound closure. When closure of PS is the desired surgical option, off-midline closure should be standard management [9].

With this possible change of paradigm in PS treatment in Denmark in mind, we decided to conduct this study to analyse which procedures are used in acute cases and in chronic cases of varying degrees of severity, and to determine the frequency of surgery performed under local analgesia, the number of surgeons performing elective PS surgery and their levels of experience, and, finally, the volume of patients per department.

MATERIAL AND METHODS

To make a database of all Danish hospitals and clinics specialised in general or plastic surgery potentially treating PS, the National Board of Health's list of hospitals and departments [10] was supplemented with data from the Danish Regions' [11] list of small private clinics who have an agreement with the National Health Insurance which is run by the Danish Regions.

At the beginning of December 2009, a questionnaire on the treatment of acute and chronic PS was sent by mail to all relevant hospitals and clinics. The questionnaire included questions on volume of procedures,

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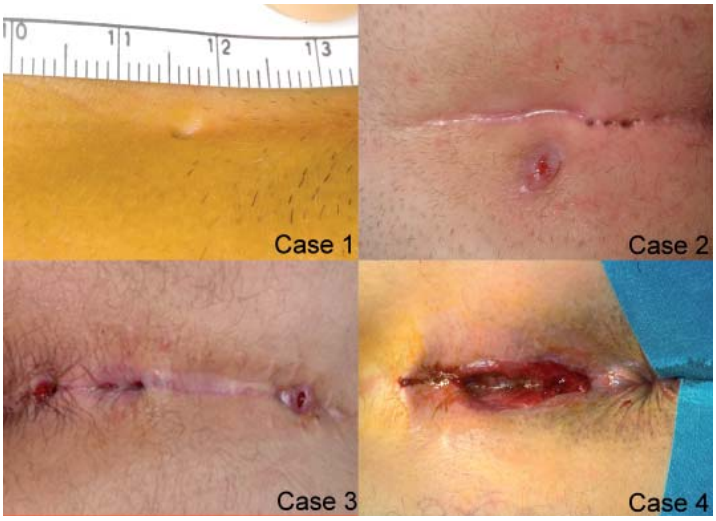
FIGURE 1

Cases as presented in the questionnaire.
Case 1: A 25 year-old patient with periods of swelling, secretion and pain in the natal cleft. Symptoms started one year ago. Which treatment would you provide for this patient?
Case 2: A 25 year-old patient with periods of swelling, secretion and pain in the natal cleft. Symptoms started one year ago. No prior surgery (scar in the midline due to inflammatory reaction). Which treatment would you provide for this patient?
Case 3: A 25 year-old patient with periods of swelling, secretion and pain in the natal cleft. Midline excision with primary closure performed 18 months ago. Recurrence of pilonidal sinus appeared seven months postoperatively. Which treatment would you provide for this patient?
Case 4: A 25 year-old patient with unhealed wound in the natal cleft. Midline excision and open treatment with closure by secondary intention 12 months ago. Which treatment would you provide for this patient?



experience of the surgeons, methods of anaesthesia used and procedures employed. Four elective cases, with clinical photographs and a short case story were included along with illustrations describing the most commonly described treatment options (**Figure 1**). The questionnaire was marked with an identification number to facilitate the forwarding of reminders to non-responders. Data were blinded in the subsequent analyses.

RESULTS

Public hospitals

The questionnaire was sent to 43 departments in 35 public hospitals. One department had closed by the end of 2009. Three clinics were excluded because they were linked to a larger department at another hospital, and patients were referred through and treated by surgeons from the main department. Two of the 39 included departments did not respond and refused to answer the questionnaire when reminders were sent. The response rate was 95%.

Thirty-one (84%) of the 37 responding departments were treating PS. Five were departments of plastic surgery, one specialised in treating complex wounds, the rest were specialised in general surgery.

TABLE 1

Number of elective procedures per department per year and number of surgeons performing elective cases per department at public hospitals in Denmark.

	n (%)
Estimated annual number of elective cases per department (n = 27)	
1-10 cases	6 (22)
11-30 cases	7 (26)
31-100 cases	13 (48)
> 100 cases	1 (4)
Number of surgeons performing elective cases per department (n = 28)	
1 surgeon	8 (29)
2 surgeons	3 (11)
3-5 surgeons	8 (29)
> 5 surgeons	9 (32)

Abscesses

Twenty-six of the responding departments treated pilonidal abscesses, but two did not treat elective PS cases. In 13 (50%) of the 26 departments, lateral incision was the standard treatment for pilonidal abscesses. Four (15%) departments performed both lateral incisions and midline procedures for acute abscesses; three (12%) performed only midline incision and two (8%) only midline excision. One department used en-bloc excision with vacuum-assisted closure (VAC), one department used midline excision and closure over a collagen-mesh with gentamicin and another department deployed primary flap plasty. One department did not state which procedure they performed. Local analgesia for treatment of pilonidal abscesses was used in only seven (28%) of 25 responding departments. It was not implemented as a standard in any department, but only used according to the preference of the patient and surgeon.

Elective cases

The number of elective cases treated per department and the number of surgeons are shown in **Table 1**. Five

TABLE 2

Treatment of elective cases of pilonidal sinus disease at departments in public hospitals and private clinics and hospitals in Denmark (more than one option per department possible).

	Case 1		Case 2		Case 3		Case 4	
	n	%	n	%	n	%	n	%
Treatment options stated for elective pilonidal sinus (public hospitals)								
Number of departments answering the presented cases	25	89	26	93	28	100	28	100
Minimally invasive procedures[a]	11	44	6	23	1	4	0	0
Midline procedures[b]	11	44	14	54	12	43	14	50
Off-midline closure[c]	8	32	13	50	21	75	15	54
Vacuum-assisted closure therapy combined with flap plasty	2	8	1	4	1	4	4	14
Treatment options stated for elective pilonidal sinus (private clinics)								
Number of clinics treating the presented cases	31	100	25	81	15	48	6	20
Refer patient to other clinic or public hospital	0	0	6	19	16	52	25	81
Minimal invasive procedures[d]	9	29	4	16	2	13	0	0
Midline procedures[b]	23	74	19	76	9	60	2	33
Off-midline closure[c]	1	3	3	12	6	40	4	67

a) Lord-Millar's brush method or Bascom's pit-pick procedure; b) excision of pits and curettage (open treatment), sinusectomy (open treatment), excision with healing by secondary intend (open treatment incl. vacuum-assisted closure) or with primary midline closure; c) cleft-lift or cleft-closure, Karydaki's operation, Limberg or other flap; d) Lord-Millar's brush method, Bascom's pit-pick procedure or neodymium-doped yttrium aluminium garnet laser treatment.

of the six departments treating ten or fewer PS cases a year specialised in plastic surgery. All procedures in these departments were performed by fourth- or fifth-year residents or specialists. Twenty-eight departments answered a question about the experience of the surgeons who treated elective PS cases. The minimum experience level of the surgeon was that of a specialist in 58% of departments, while 21% were fourth- or fifth-year residents and in 21% of departments surgery was performed by third-year residents or by physicians with even less experience. There is a significant relation ($p = 0.033$) (Pearson's test) between a low level of experience among the surgeons and a large number of surgeons per department performing elective PS surgery. The surgical procedures used in the four different elective cases are shown in **Table 2**. One department felt unable to answer this part of the questionnaire on the basis of the presented case stories and photographs.

Local analgesia

Local analgesia was used in elective cases in 12 (41%) of the 29 public departments performing elective PS surgery. In only two departments was local analgesia used in more than 90% of the cases. In nine departments, local analgesia was used only in cases with small sinuses, and in four of these only at the patient's request. Four (13%) departments used spinal analgesia, the rest employed general anaesthesia as standard. The estimated frequencies of cases per department treated under local analgesia are shown in **Figure 2**.

Private clinics or hospitals

The questionnaire was sent to 118 private clinics or hospitals. Eight had closed, and 92 (84% of the remainder) answered the questionnaire. Only 33 (36%) of the 92 clinics treated pilonidal disease, including one that treated only abscesses. A total of 28 clinics treated pilonidal abscesses.

In six (21%) of the 28 responding clinics, lateral incision was standard treatment for pilonidal abscesses. Three (11%) clinics performed both lateral incisions and midline procedures for acute abscesses, while 17 (61%) performed only midline incision or excision. One clinic used an unspecified procedure.

Sixteen (48%) of the clinics treated ten or fewer cases a year and no private clinic performed more than 30 procedures a year. The methods used in private clinics for treatment of the four elective cases are shown in

FIGURE 2

Estimated frequency of elective cases performed under local analgesia in public hospitals in Denmark (n = 29).

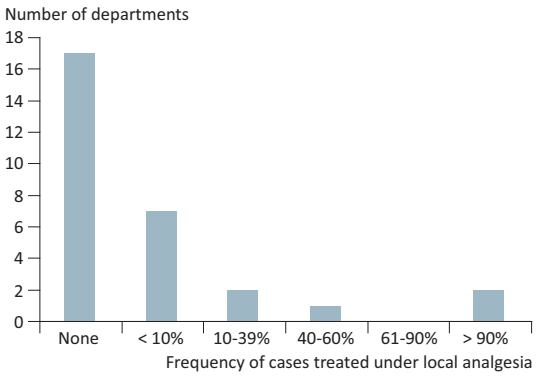


Table 2. At one clinic staff felt unable to answer this part of the questionnaire on the basis of the presented case stories and photographs.

DISCUSSION

This study shows that more than half of the departments in public hospitals in Denmark are still performing midline surgery in some cases. As mentioned above, the off-midline procedure seems superior to the midline procedure with respect to recurrence and healing. The majority of articles in the Cochrane review [9] report significantly lower recurrence rates after midline procedures than rates reported in Danish studies [2, 3]. However, the Danish studies seem more reliable from a Danish point of view, and the Danish study [3] included in the Cochrane review had a complete three-year follow-up with recurrence rates of 21.2% after midline closure and 12.9% after midline excision and open treatment with closure by secondary intention. Results after off-midline closure and procedures such as Bascom's pit-pick have been presented at meetings and educational sessions in many hospitals in Denmark during the past three years by our group and others.

Despite this, it is disappointing that 54% of the departments in public hospitals and 74% of private clinics are still performing midline procedures in some cases, especially because the off-midline procedure has become the gold standard [12] and midline surgery is considered obsolete. The reason for this lag is unknown, but departments with a large number of surgeons performing PS surgery seem to be performing more midline surgery. However, a statistical analysis of these results cannot be performed with the present study design. The significant relationship between low experience of surgeon and high number of surgeons per department performing elective PS surgery indicates that PS surgery is considered a low-status activity in some departments. The reason why 74% of private clinics are treating simple cases of PS with midline surgery is unknown, but one explanation may be that the specialists in these small clinics were trained during the period when midline procedures were the gold standard. Continued information and training is needed to change this.

It seems that a change of paradigm in PS surgery in public hospitals is associated with the number of surgeons performing such surgery. Even though the study is weakened by the fact that the number of patients is estimated by the departments themselves and not extracted from the National Patient Register, half of the departments in public hospitals are treating less than 30 elective cases a year. Given such low surgery turnover, it seems unnecessary to have more than one, or at most two, surgeons per department performing elective cases. Other initiatives that may improve the Danish PS treatment standard are centralisation with fewer departments performing PS surgery and National Guidelines based on current evidence.

It is very disappointing that local analgesia is used in only 41% of the departments, and that only two departments use local analgesia in more than 90% of the cases. Several reports [1, 13-16] have shown that Bascom's pit-pick, Lord-Millar's procedure and the off-midline procedure can easily be performed under local analgesia. A limited number of patients insist on general anaesthesia, and this is indicated in rare cases. However, our group has obtained a high level of patient satisfaction owing to extensive preoperative information and the use of an appropriate local analgesia; an approach that has a high cost-benefit ratio. One way to increase the number of patients who have PS surgery performed under local analgesia as out-patients may be to change the way departments are paid. The present payment in Denmark for PS procedures performed under general anaesthesia in non day-surgical departments is about € 2,700, and the payment for the same procedures performed as day-surgery under local analgesia is about € 170 [17]. If payment was related to the procedure performed, without any reference to method of anaesthesia or type of admission, the departments and hospital managements would have a financial incentive in favour of day-surgery under local analgesia which would benefit the patients. This has been implemented for e.g. inguinal hernia surgery. Since January 2010, it has been possible to report the specific procedure performed to the National Patient Register [18], which thereby allows differentiated, procedure-based payment.

CONCLUSION

More than half of the surgical departments in public Danish hospitals and more than 70% of private clinics are still performing obsolete midline procedures for PS. In some public hospitals, elective PS surgery remains a procedure partly performed by surgeons with little experience and training instead of by specialists with an interest in PS. Local analgesia is standard at only two Danish hospitals. National guidelines would possibly be instrumental in improving PS treatment quality, and a payment system for PS treatment that does not differentiate prices on the basis of method of anaesthesia may also serve to increase the use of local analgesia.

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CONFLICTS OF INTEREST: *Claus Anders Bertelsen* owns the private clinic Pilonidalklinkken. Parts of the material have previously been presented at the annual meeting of the Danish Surgical Society on June 4th 2010.

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