

Original Article

Comparative Study of Closed and Open Methods in Sacrococcygeal Pilonidal Sinus Management – Results of Advancement Gluteal Fascio Cutaneous Flap – in Jahra Hospital

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ABSTRACT

Objective: To assess two techniques in the management of sacrococcygeal pilonidal sinus.

Design: Prospective randomized study

Setting: Al-Jahra Hospital, Kuwait.

Subject: Of a total of 105 patients with chronic pilonidal sinus disease, 56 were treated by advancement fasciocutaneous flap and 49 by an open wound technique after excision.

Main Outcome: Morbidity and Recurrence

Result: The study was carried out between March 1997 and April 2000. The mean hospital stay was 3.7 days for the advancement fasciocutaneous flap and 7 days for the open wound method. The mean operative time was one hour for the flap method and 20 minutes for the cases where the wound was left open. The mean follow up

was 20 months (range 6-40 months). A total of 10 cases (18%) that underwent the flap technique had minor complications in the form of wound seroma and infection, bursting of skin sutures, local numbness and chronic pain while 12 cases (24%) of the open wound technique had complications in the form of bleeding, pain and chronic infection. Delayed healing, up to 11 months, was noted in seven cases (18.4%) of the open method cases. Recurrence occurred in two cases (3.6%) of the advancement flap technique, and nine cases (19.4%) of the open method technique.

Conclusion: Excision and closure by gluteal fascio cutaneous flap compares favorably with leaving the wound open after excision in the treatment of sacrococcygeal pilonidal sinus.

KEYWORDS: advancement gluteal fasciocutaneous flap, chronic pilonidal sinus, open wound technique recurrence

INTRODUCTION

Since first reported 130 years ago by Anderson^[1], the surgical treatment of sacrococcygeal pilonidal sinus, a benign yet troublesome disability of young adults, is not a minor procedure. It is characterized by a diversity of approaches and techniques, which implies that no single method of therapy has been completely satisfactory.

Excision and leaving the wound open was the treatment method favored by the surgeons at our hospital before the start of this study in 1997, but the recurrence rate was high. Our group used many technically demanding techniques in the primary closure of the wound after excision but these were difficult to apply in the general hospital. In the literature, it is recommended that these techniques be done in recurrent and complicated cases^[2,3]. We started a randomized trial in March 1997 to study the results of excision and primary closure by advancement gluteal fasciocutaneous flap compared with excision and leaving the wound to

determine the most appropriate method, which would not only eradicate the obvious lesion but also have a low recurrence.

PATIENTS AND METHOD

From March 1997 to April 2000, 105 cases with symptomatic chronic pilonidal sinus of the natal cleft were treated. The duration of symptoms ranged from 1 month to 2 years (mean = 7 months). All cases were followed until the end of the study. A total of 99 men (mean age = 26 years) and six women (mean age 22 years) were randomized to receive either excision and closure by gluteal advancement fasciocutaneous flap or excision without closure. Assigning the technique alternately randomized the cases. When there was only one case on the operation list, it was done by the flap method. The study protocol was given to the patient in the surgical outpatient clinic prior to their enrollment in the study. A single team handled all cases. A total of 56 cases underwent

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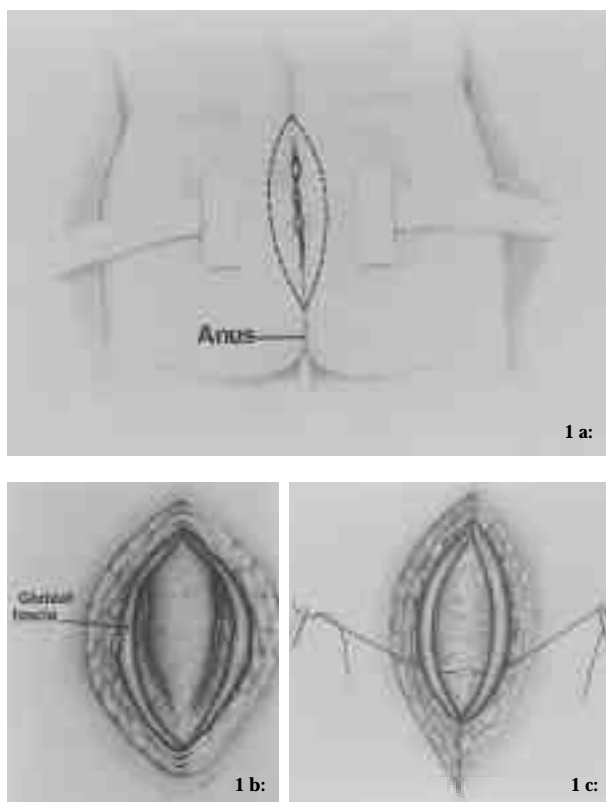


Fig. 1 a: Patient in jack knife position with buttocks taped laterally.

Fig. 1 b: Flaps of gluteal fascia developed for primary closure.

Fig. 1 c: A proximation of flap in midline (from mandels Rand Thomas, CG, JR Surg Gyneco Obst 134,449).

advancement gluteal fasciocutaneous flap operation (52 males and 4 females) while 49 cases underwent the excision and open wound operation (47 males and 2 females). Multiple sinus openings were found in 72 cases (43 in flap cases and 29 open wound cases). Lateral openings were found in 24 cases (11 in flap cases and 13 open wound cases). Two flap cases and three open wound cases had earlier undergone drainage of pilonidal abscess. All patients were admitted to the hospital the day before the operation. They were allowed fluids only after lunch and rectal enemas were given in the afternoon. On the morning of the operation, the natal cleft was shaved and disinfected with chlorhexidine solution and covered with sterile gauze. All patients received a single dose of ceftriaxone, 1 gm, before induction of anesthesia.

Technique of operation:

Both operations were done in the prone position. The buttocks were strapped apart, and the skin was prepared. The sinuses were probed to plan the extent and direction of skin excision. Elliptical incision was done involving the diseased skin and deepened down perpendicular to the skin incision to the fascia covering the sacrum. The medial tissue was excised in block, looking for granulation tissue and sinus tracts at the lateral edges. The excised

specimen was checked for incomplete excision. If so, the wound was explored for more lateral excision. These steps were done before use of the diathermy for hemostasis. The open wound cases ended at that stage when the wound was packed with sterile gauze.

In the gluteal fasciocutaneous advancement flap cases (Fig. 1), the lateral crest of the sacrum and the deep fascia over the gluteus maximum muscle on both sides was identified. This fascia was elevated on either side by undermining and was separated from the sacral fascia and underlying muscle for at least 5 cm or until it become mobile. The dissection was done at the upper and lower end also. Hemostasis is crucial. Closure of any lateral dead space on both sides was done by vicryl/oo. The two fascial flaps overlapped in the midline, and were sutured together (double-breasted) and fixed to the sacral fascia. Closure of the subcutaneous tissue in three layers was done in order to evert the skin flap. The skin was closed using interrupted or subcuticular stitches. No drains were used (Fig. 1).

The following protocol was strictly adhered to postoperatively in both techniques: The patient was nursed on his/her side, or prone, for the first 24 hours. The wound was exposed on the second postoperative day and, if found clean, the patient was discharged home that day. Daily dressing in the clinic was advised to patients with the open wound technique and every third day for flap cases until sound healing was realized.

Follow - up

The patient were seen in the surgical outpatient clinic for wound inspection and removal of stitches after 10 days from the operation day in flap cases and inspection of open wound in the open wound cases weekly. All symptoms, signs, the time of complete healing and recurrence were recorded in an analysis scheme for each case every 3, 6, 12 weeks and then every 3 months. The patients were instructed to shave the natal cleft monthly for six months after the operation

RESULTS

The operating time for open wound cases was 20 minutes (range 15 to 30 minutes) and one hour for flap cases (45 minutes to 2 hours). The follow up results of the 105 patients after a median of 20-month follow up (range 6 – 40) are shown in Table 1.

In flap cases, seroma collections were treated by aspiration once in two cases and three times in one case. Wound infection and abscess formation of the three cases were treated by removal of the skin sutures, daily dressing and antibiotics according to the culture and sensitivity of the organism. All healed in 2-3 weeks. The seven cases of minor

wound breakdown healed on daily dressing within two weeks. The numbness over the sacral area improved in 4–6 weeks time. The cases of delayed healing due to breakdown of the wound or as a result of wound infection healed without leading to established recurrence.

In the open wound technique cases, wound bleeding was encountered in four cases (8%). Bleeding stopped with packing except in one case where exploration of the wound under anesthesia and ligation of the bleeding vessel was required. Wound breakdown, after complete healing, persisted for three months in two cases. Delay healing developed up to 11 months in two cases with established recurrence.

Only two of the 56 cases (3.6%) who underwent excision and flap closure developed recurrence. Both underwent exploration at 3 and 6 months and overlooked tracts to the anorectal intersphincteric space and ischioanal fossa were found, which were respectively drained and the wound was left open. Nine cases (18.4%) treated with excision and open wound technique developed recurrence; seven of them established after an average delayed healing of 11 months (range 6-18 months). The other two cases developed after 21 and 30 months. The mean hospital stay was 3.7 days (range 2 to 8 days) for the patient whom the flap method was used and 7 days (range 2 to 17 days) for the patient treated by the open wound method.

Patient satisfaction was 98% in the flap method and only 75% in the open wound method. The patients who underwent the excision and open wound technique were reported absence from work up to 45 days (range = 21 to 60 days) but the cases who underwent flap technique reported absence from work up to 20 days (range = 15 to 30 days).

DISCUSSION

Pilonidal sinus disease is a common condition described by Mayo^[4] more than 160 years ago. It can be associated with considerable morbidity and have significant socioeconomic impact on affected individuals^[5]. The etiology of this disease is debatable. Hodges in 1880 introduced the term pilonidal and proposed a theory of congenital origin^[6]. A century later, Patey^[7] postulated the theory of an acquired condition which is now widely accepted. The major cause of pilonidal sinus underlying this theory involves the insertion of loose hair that collect in gluteal furrow^[8].

Despite numerous studies that have been conducted so far, there has not been universal agreement about the perfect surgical procedure for pilonidal sinus, probably because there is none^[9]. Surgery should not only eradicate the presenting

Table 1

Follow up results of both operations figures expressed as number and (%) of patients

Early Complication (Total cases =105)	Excision and gluteal fasciocutaneous flap (n = 56)		Excision and lay opening (n = 49)	
	n	(%)	n	(%)
Bleeding	0		4	(8)
Minor wound break down	7	(13)	6	(12)
Seroma	3	(5)	0	
Wound infection or abscess	3	(5)	8	(16)
Haematoma	1	(2)	0	
Chronic Pain	2	(4)	6	(12)
Numbness	4	(7)	2	(4)
Induration of the wound	6	(11)	5	(10)
Delay healing	4	(7)	9	(18)
Total number of patients	10	(18)	12	(24)

Table 2

Important factors to be considered in evaluating different procedures^[9]

Procedure	Post operative Complication	Healing time	Wound care	Recurrence rate
Primary closure	+++	+	+	++
Secondary intention	++	+++	+++	++
Marsupialization	+	++	++	+

sinus but should also aim to eliminate factors that predispose the formation of another sinus^[8]. Mersh^[5] extensively surveyed the literature on various operations and their results. In general, the current approaches are one of the three different operative procedures: excision and open wound which ends with healing by secondary intention without a change of anatomy; excision with marsupialization in which the sinus or sinuses are split over the probe and edges of the skin are sutured to the margin of the remnant of cyst or sinus; and excision with primary closure either by leveling the internal groove or the complete obliteration of the natal cleft^[5]. Judging the results of the different procedures is difficult because few authors have given adequate consideration to all the medical, economic and social aspects of these procedures. Spivak^[9] described important factors that should be considered in evaluating different procedures (Table 2)

In our study, we used two techniques, which were applied randomly on 105 patients. Open wound method, which was used by Hopping in 1954^[10] and dealt only with the pilonidal cyst. The rationale of this procedure is the avoidance of primary closure of a contaminated wound^[9]. The other method used was excision of pilonidal sinus and closure by advancement gluteal fasciocutaneous flap, which was initially described by Holman in

1946^[11] and then modified by Stanley in 1972^[12] but is not widely practiced. This procedure removes the pathology and deals the etiological factors by strengthening and leveling the natal cleft^[12]. For ease of comparison, the results of both techniques are shown in Figures 2-4.

Operative time for primary closure was longer than open wound, but it reduced after the first five cases from 90 minutes to one hour or less. The survey of Mersh reported the same results^[5]. The main complication in our study was delayed healing in open wound cases, which ended in established recurrence in seven cases and wound infection. In most series, primary wound infection and delay healing outnumber recurrences^[11]. The main complication of the flap technique, which is not a completely tension-free repair, was wound breakdown, which improved with wound care without any other complication. Numbness occurred in four cases (7%), which is less than 50% reported by other procedures of primary closure^[13].

In this study, the recurrence in the flap method is low (3.6%). Stanley^[12] found no recurrence on application of this procedure. On the other hand, the recurrence rate of the open wound method was 18.4% (7 cases). One pertinent fact in reviewing the literature is an almost linear decrease in the number of recurrences for open wound method. In the study of Hadar et al^[9], a 13% recurrence rate was reported. It has been observed that recurrences developed within the first year after primary closure and recurrences after the open wound treatment often appear later^[14]. The two cases of recurrence in the flap technique of our study were caused by overlooked sinuses. It was reported by Kronborg^[15] that recurrence within three months is caused by an overlooked sinus.

Open wound technique suffers the disadvantage of prolonged mean hospital stay when compared with the flap technique (7:3.7 days). The patients after open wound technique need clinic attendance for many painful dressing changes, causing burden to the patient and surgeon for months until healing is absolutely sound. Disability recorded in our study is 45 days as compared to 20 days for the flap method. However, it is questionable whether or not these patients were able to return to full employment with sensitive open wounds. It would seem that the period of true disability was not fully explained in most of these studies^[5]. It is obvious in our study that the patient accepted and were satisfied with the closing of wound by a simple procedure rather than leaving the wound open to heal by secondary intention (98%:75%). This is also better than the 67% reported after Z-plasty^[16].

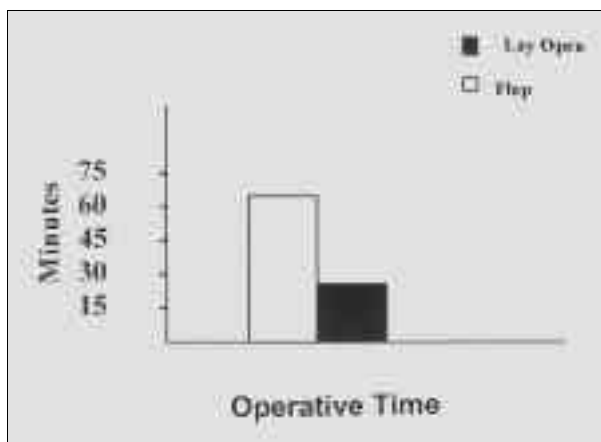


Fig. 2: Operative time in minutes

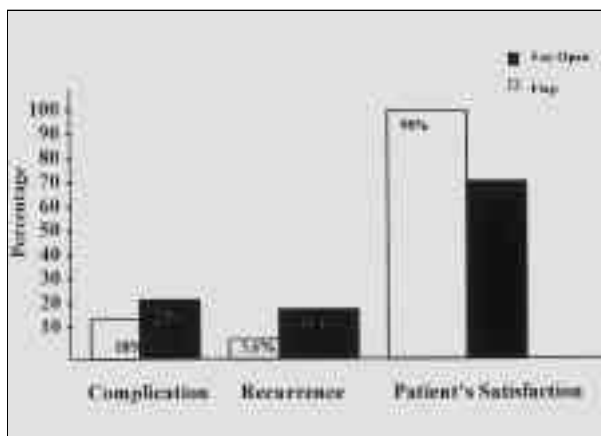


Fig. 3: Comparison of complication, recurrences and patients satisfaction of the two procedure

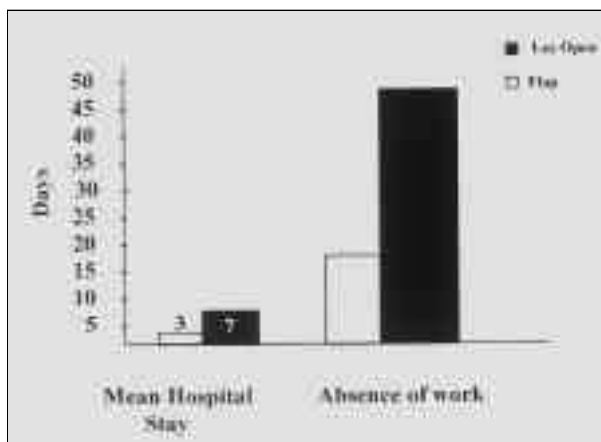


Fig. 4: Mean hospital stay and absence of work in days for the two operation

CONCLUSION

This study has shown that the excision of sacrococcygeal pilonidal sinus and closure by advancement gluteal fasciocutaneous flap is preferable to excision and leaving the wound in many aspects; less bleeding, lower infection rate, reduced wound pain, fewer post operative visits, faster healing time, shorter time off work and less recurrent rate. This method also eliminates some of

the factors that predispose to the recurrence and can be practiced by general surgeons. In any event, the patient should be aware of the potential complications, recurrence rate, post-operative care and expected healing time of the different alternatives.

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