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Open Versus Closed Methods in Treatment of Pilonidal Sinus Disease

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Abstract

Background Pilonidal sinus disease can be managed surgically either by excision & primary closure, or by excision and leaving the wound to heal by secondary intention. This study is designed to show the difference between these two methods.

Objective To assess the difference between excision and primary closure versus excision and healing by secondary intention in treatment of pilonidal sinus disease.

Methods Between January 2005 and January 2009, 60 median aged patients with Pilonidal sinus disease were studied in Al-Kadhimyia Teaching Hospital, Baghdad, Iraq; 30 cases were operated by excision and primary closure (group I); the remaining 30 cases were operated by excision and healing by secondary intention, without closure (group II). The principle outcome measures recorded were duration of hospital stay, operative time, duration of complete healing, wound infection and recurrence rate. Satisfaction and comfort of patient was monitored by using visual analogue scale during first five days post-operatively. Data were statistically analyzed by using SPSS & Chi square.

Results A total of 60 patients were divided into 2 groups, 30 patients operated by using primary closure (group I), and 30 patients operated without closure (group II). Age range of patients was from (16 - 37 yrs). Duration of hospital stay and duration of complete healing was longer in patients of group II than those of group I ($p \leq 0.001$). Operative time in group I is more than that in group II ($p \leq 0.001$). Pain scores were lower in group I than group II ($p = 0.004$). The frequency of wound infection and recurrence rate after one year follow up were more in group I than group II, this was statistically of little significance.

Conclusions Excision and primary closure is recommended as a preferred procedure in the management of chronic sacral PNS disease. It has the advantages of short hospital stay, early wound healing, rapid return to work.

Key words pilonidal sinus, primary closure, secondary intention

Introduction

Sacral pilonidal sinus (PNS) disease is an acquired condition, usually seen in young adults manifest by midline pits in the natal cleft and associated with hair. The underlying pathophysiologic feature is enlarged hair follicles due to midline vacuum and pulling forces; when plugged with hair or keratin, the follicle rupture leading to a foreign body reaction within the presacral subcutaneous tissue and subsequent acute and chronic abscess [(1)].

Sacrococcygeal pilonidal disease is a common condition causing discomfort that may interfere with education or employment, sometime for prolonged period [(2)]. It is most common in the third decade of life its incidence peaks between 16-20 years of age. Men are affected three to four times more commonly than women [(3)].

The management of pilonidal sinus disease is variable, debatable, and problematic [(4,5)]. A number of surgical treatment options exist:

simple incision and drainage, lying open, marsupialization, excision and primary closure or rhomboid excision and Limberg flap procedure [6,7,8,9].

Primary wound closure versus wound healing by secondary intention, after excision of sacral PNS, are the two principal surgical options for a chronic pilonidal sinus treatment [10].

Methods

Sixty patients with sacral pilonidal sinus disease were studied prospectively from January 2005 till January 2009 in Al-Kadhmyia Teaching Hospital. Each case was followed up for at least one year. Those cases were uncomplicated and have no other associated diseases and were approved the study.

Operative technique

Thirty cases were operated by excision and primary closure (group I); the remaining thirty cases were operated by excision and healing by secondary intention, without closure (group II).

In group one, after probing the sinus with canula and injection of methylene blue dye, ellipse incision is made around the sinus excising the whole tract down to the sacral fascia as shown in figure 1.

Figure 1. Excision of sacral PNS

After full hemostasis of the elliptical defect, three to four deep nylon stitches, depending on the size of the defect, are applied through full thickness of the defect including the presacral fascia, as seen in figure 2.

Figure 2. Applying nylon stitches

Holding these sutures untied, the skin edges of the defect are closed by mattress silk suture, and then a pack of gauze is applied between the nylon sutures which then are tied over the pack as seen in figures 3, 4 and 5.

Figure 3. Closing skin

Figure 4. Applying pack

Figure 5. Tying nylon suture

The nylon and silk suture are removed after ten days from surgery. Figure 6 showed healed scars after sacral PNS closed method surgery.

Figure 6. Healed sacral PNS by closed method

In group two, after identification of the sinus tract with methylene blue dye, full excision of the sinus down to the presacral fascia, hemeostasis is ensured and pack of gauze is inserted in the elliptical defect with daily dressing till time of healing.

Follow up

To evaluate satisfaction and comfort of patient, a questionnaire including postoperative visual analog scale (VAS), time to sitting on toilet without pain, and time to walking without pain were recorded. Patients were asked to complete a 10-cm long VAS for their health status before and after surgery that ranged from 0 for "very bad" to 10 for "very good." The scale was constructed with numeration, thus allowing patients to mark a point along the scale that best represented their health status at that time.

Statistical analysis

All data were collected and analyzed by using SPSS. Statistical analysis was performed using Chi-squared test to compare discrete variables and two tailed paired Student's t-test to compare continuous variables between groups. $p < 0.05$ was considered statistically significant for all tests.

Results

The study involved sixty median aged patients complaining of sacral PNS (ranging from 16 to 37 years), as shown in table 1.

Table 1: Age distribution in two groups of patients

Age	Mean±SD	SE	Sig. (2-tailed)
Group 1	24.867±5.056	0.923	≥ 0.05
Group 2	24.800±5.378	0.982	

Those patients were admitted to Al-Kadhmyia Teaching Hospital, Baghdad, Iraq from January 2005 till January 2009. Thirty patients were treated by closed method or primary closure, (group one) and the other thirty patients were treated by open method or healing by secondary intention (group two). Symptoms of sacral PNS before surgery in both groups of patients had the same duration of time, as shown in table 2.

Table 2: Duration of preoperative symptoms in both groups of patients

Duration of pre operative symptoms	Mean±SD	SE	Sig. (2-tailed)
Group 1	1.310±0.723	0.132	≥ 0.05
Group 2	1.330±0.648	0.118	

Duration of hospital stay is more in patients of group 2 than those of group 1, as shown in table 3 and figure 7.

Table 3: Duration of hospital stay of both groups of patients

Duration of hospital stay	Mean±SD	SE	Sig. (2-tailed)
Group 1 Group 2	1.467±0.419 2.267±0.338	0.076 0.062	≤ 0.001

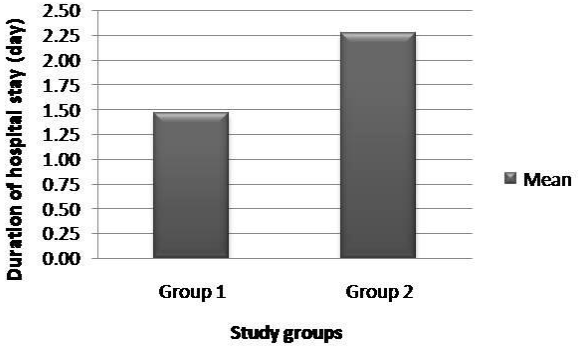

Figure 7: Duration of hospital stay

Complete healing consumes more time in patient of group 2 than those of group 1, as shown in table 4 and figure 8.

Table 4: Duration of complete healing in both groups of patients

Duration of complete healing	Mean±SD	SE	Sig. (2-tailed)
Group 1 Group 2	18.533±2.488 27.600±4.248	0.454 0.775	≤ 0.001

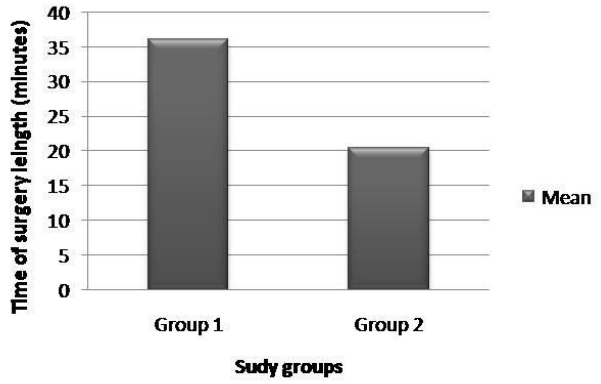

Figure 8: Duration of complete healing

Surgery consumes more time in patients treated by primary closure (first group) than those treated by simple excision and secondary intention (second group), as shown in table 5 and figure 9.

Table 5: Operative time in both groups of patients

Time of surgery length	Mean±SD	SE	Sig. (2-tailed)
Group 1 Group 2	36.138±3.623 20.500±2.418	0.673 0.441	≤ 0.001

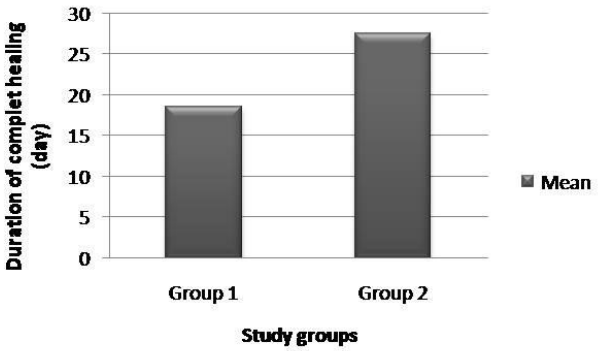

Figure 9: Operative time

The clinical outcome can be compared in two groups of patients and as shown in table 6. Differences in frequency of Wound infection and recurrence rate after one year follow up in both groups of patients can be compared as shown in table 7.

Table 6: Clinical Outcome in two groups of patients

Clinical Outcome	Group 1	Group 2	Sig. (2-tailed)
Post-operative VAS* during first five days	5.1	7.5	0.004
Duration of hospital stay	1.467	2.267	< 0.001
Duration of complete healing	18.533	27.600	< 0.001
Age	24.867	24.800	0.961
Duration of pre-operative symptoms	1.310	1.330	0.911
Operative time	36.138	20.500	< 0.001

*VAS: visual analogue scale for pain (from 0-10)

Table 7: Comparison between the frequency of Wound infection and recurrence rate after one year follow up in two groups of patients

parameter		Group I	Group II	Significance
		Count (Percentage)	Count (Percentage)	
Wound infection	negative	27 (90%)	29 (97%)	0.301
	positive	3 (10%)	1 (3%)	
Recurrence after one year follow up	negative	25 (83%)	27 (90%	0.448
	positive	5 (17%)	3 (10%)	

Discussion

Pilonidal sinus is a disease that occurs in sacrococcygeal area, it is a blind track lined by granulation tissue that leads to a cystic cavity. It's an acquired condition that usually seen in young adults of working age. In this study, both groups of patients had near & equal age group range [6].

On the other hand, there were no significant changes between two groups of patients participating in this study regarding the duration of pre-operative symptoms of pilonidal disease [1]. This fact is well explained in table 2.

Regarding the duration of hospitalization, table 3 and figure7 showed that patients in group 1 had significant ($p \leq 0.001$) shorter hospital stay than those of group 2, the same result was obtained from table 4 and figure 8 that deals with the duration of complete healing in both groups of patients. This can be explained by the fact that the healing process took longer time in simple excision and healing by secondary intention than in primary closure that provides an earlier wound healing and reduced hospital stay [3,11]. Most patients return to work in 3 to 4 weeks [4,8,13].

The operative time for treatment of patients in group one by primary closure was longer than that recorded for group two of patients treated by open method (secondary intention), as shown in table 5 and figure 9 (with p value ≤ 0.001). This can be explained by the fact that wound closure needs additional time over that needed for dissection [2, 12, 13].

In table 6, a comparison was made between the clinical outcomes of both groups of patients of the study. By monitoring VAS (visual analogue scale) which is a scale for pain from 0-10 during first five days after surgery, we noticed lower pain scores in group 2 than in group 1. The reason behind this is that simple excision and healing by secondary intention would cause more patient discomfort, more outpatient attendance for many painful dressings [9,14]. Although, the difference between two groups of patients regarding VAS was not significant ($p = 0.004$), this can be explained by the fact that excision and primary

closure technique causes restriction of activity because of tissue tension [5], and that most complaints by patients after surgery were caused by wound tenderness [7,10,15].

Table 7 showed a comparison between the frequency of wound infection and recurrence rate after one year follow up in two groups of patients. We did not encounter any significant difference in the wound infection rate (10% vs. 3%) of both groups. The recurrence rate in closed and open methods was 17% and 10% respectively, which was statistically of little significance [2,4,5].

From the above, we can conclude that excision and primary closure is recommended as a preferred procedure in the management of chronic uncomplicated sacral PNS disease. It has the advantages of short hospital stay, early wound healing, rapid return to work. Although the frequency of wound infection and recurrence rate were more in closed method, but the difference was of little significance.

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