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Tie Over with Pressing Interrupted Sutures versus Usual Karydakis in Management of Sacrococcygeal Pilonidal Sinus Disease

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ABSTRACT

Background: Sacrococcygeal pilonidal sinus disease is one of the most common annoying conditions that affecting commonly sacrococcygeal area. The best management of that disease is surgical treatment. Although many surgical methods used for treatment, recurrence rate is still the main challenge for all techniques. Karydakis procedure is one of the most commonly used methods for management of pilonidal sinus.

Objective: In this study we tried to compare usual Karydakis procedure and tie over with pressing interrupted sutures as management for pilonidal sinus as regard rate of recurrence, wound complication and hospital stay and off-work time.

Patients and methods: This is a prospective study done over 75 patients of sacrococcygeal pilonidal sinus who were divided in two groups (**group A)** included 35 patients managed by Karydakis procedure and **(group B)** included 40 patients managed by tie over with pressing interrupted sutures, between June 2017 till May 2019 .

Results: In group **B** all patients were discharged on the same day of surgery but in group **A** the mean hospital stay was of 3.9 ± 2.4 days. Three patients in group **A** developed seroma compared with one patient in group **B**. In group **A**, 11.4% of patients developed wound infection compared with 2.5% in group **B**. Three patients in group **A** had recurrence but No recurrences were noted in group **B,** although our study was limited as the duration of follow-up was short to accurately weigh recurrence rate.

Conclusion: Tie over with pressing interrupted sutures is safe than usual Karydakis procedure with less hospital stay and less recurrence rates.

Keywords: Karydakis flap, Pilonidal sinus, Tie over.

INTRODUCTION

Pilonidal sinus disease (PsD) is defined as chronic inflammatory disease, which usually affecting the natal cleft. Herbert was the first one who described the disease at Mayo in 1883**(1).** The exact cause of (PsD) is not known but many theories tried to explain the etiology. The most accepted one of them is the jeep seat theory, which proposes that the disease is caused by hair accumulation at natal cleft and perforation of skin making foreign body reaction at subcutaneous layer, which open in multiple or single tracts to the skin surface. Suggested predisposing factors include family history, hair falling, prolonged settings, deep natal cleft and obesity **(2).** The most common age affected is adolescents and usually in male variants**(3).**

The main complaint of the patients with (PsD) is low back pain and discharge. Sometimes the sinus opening is closed and this leads to pus accumulation and abscess formation. If that happened the patient will feel severe throbbing pain at abscess site with hectic fever and hence urgent abscess incision and drainage is advised **(3)**.

Many conservative and surgical techniques are used for management of pilonidal sinus but surgical treatment still the ideal way for management. Conservative measures includes meticulous hair control by natal cleft shaving or by laser ablation, improved perineal hygiene and phenol injection**(1).**

Many studies used to compare different surgical techniques as regard postoperative complications, length of hospital stay and rates of recurrences. Surgical procedures for (PNS) in general could be divided in two categories (asymmetric) flap techniques with less recurrence rates and midline closure techniques with high recurrence rates**(4).**

One of most commonly used asymmetrical flap techniques is Karydakis flap which is preferred by many surgeons rather than other asymmetrical methods because it is easy and does not need more technical experience**(5)**.

This study compared tie over with pressing interrupted sutures versus usual Karydakis in management of sacrococcygeal pilonidal sinus disease regarding rate of recurrence, wound complication and hospital stay and off-work time.

PATIENTS AND METHODS

This was randomized prospective study conducted from June 2017 till May 2019 at General Surgery Department, Bab Alsheria Hospital, Al-Azhar University. The study was done on 75 patients of sacrococcygeal pilonidal sinus randomly divided in two groups; (**group A)** included 35 patients managed by Karydakis procedure and **(group B)** included 40 patients managed by tie over with pressing interrupted sutures. Patients excluded in that study were patients with recurrent sinus, pilonidal abscess, cellulitis, patients with chronic illness such as diabetes or immunocompromized patients and patients refused to participate in the study.

Ethical approval:

An approval of the study was obtained from Al-Azhar University Academic and Ethical Committee. Every patient signed an informed written consent

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for acceptance of the operation and participation in the study. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

For all patients appointed for elective surgery, preoperative investigation and patient preparation were done. Prophylactic antibiotic in the form of third-generation cephalosporin was given 1 hour before operation for all patients.

Surgical procedures:

All procedures were done under spinal anesthesia, patients were positioned in prone position medical adhesive tapes were used to separate the gluteal folds. Sinus opening was then cannulated and injected gently with diluted methylene blue in order to follow the course and extent of the sinus. At the side of the most lateral sinus opening we drew a line extending 3 cm lateral to the midline, then we drew unequal ellipse to include the whole pilonidal complex**.**

Sterilization and toweling were done and the drawn area was then excised down to the presacral fascia, then the medial flap was mobilized across the midline using electrocauterization. After proper homeostasis was ensured the adhesive taps were removed.

For group **A**, a Redivac suction drain was inserted after mobilization of the flap and closure of subcutaneous layer by Vicryl 2/0 threads followed by skin closure by interrupted Prolene 3/0 sutures in mattress or simple stitches.

In group **B**, we used Prolene one sutures to perform full thickness interrupted stitches down to the presacral fascia. Three or four stitches were taken with 2 to 3 cm distance between each other's and left untied **(Fig. 1).** Redivac suction drain of 16**F** size was then inserted inside the wound and got out from a separate incision about 4 cm away from the original incision.

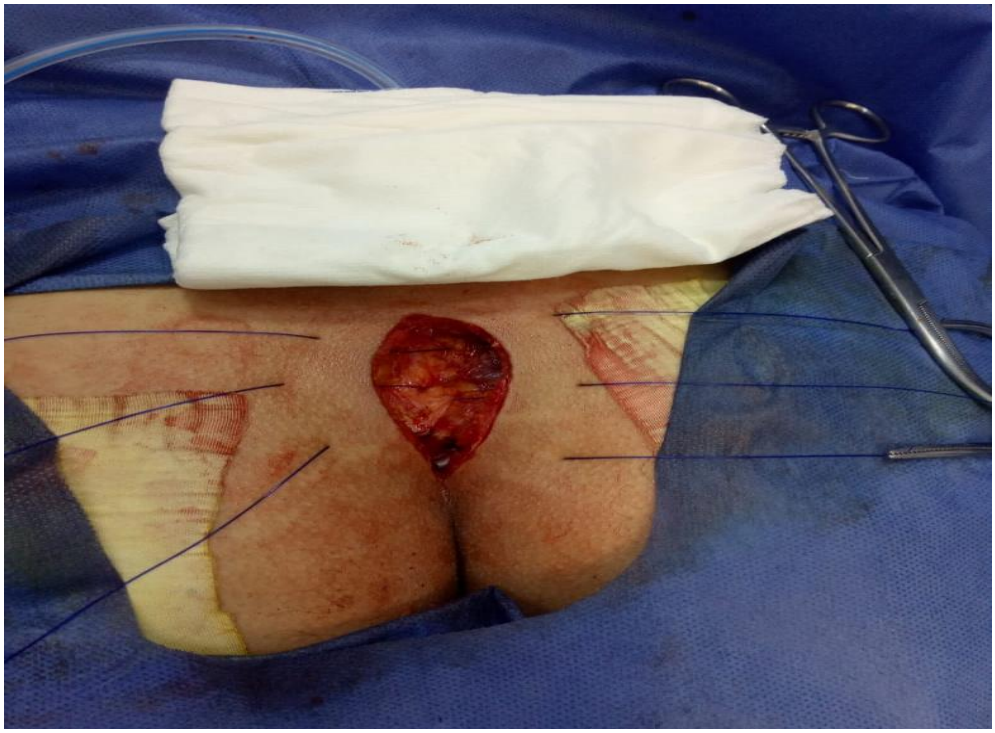

Figure (1): Three or four stitches were taken with 2 to 3 cm distance between each other's and left untied Vicryl 2/0 threads were used to approximate subcutaneous layer of each side of the wound, then the skin was closed by the aid of Prolene 3/0 sutures in simple or mattress stitches. After skin closure we noticed shifting of suture line away from midline then the laid threads were ligated over pack of gauzes to press the suture line, obliterate the dead space and to prevent wound dehiscence **(Figs. 2 and 3).**

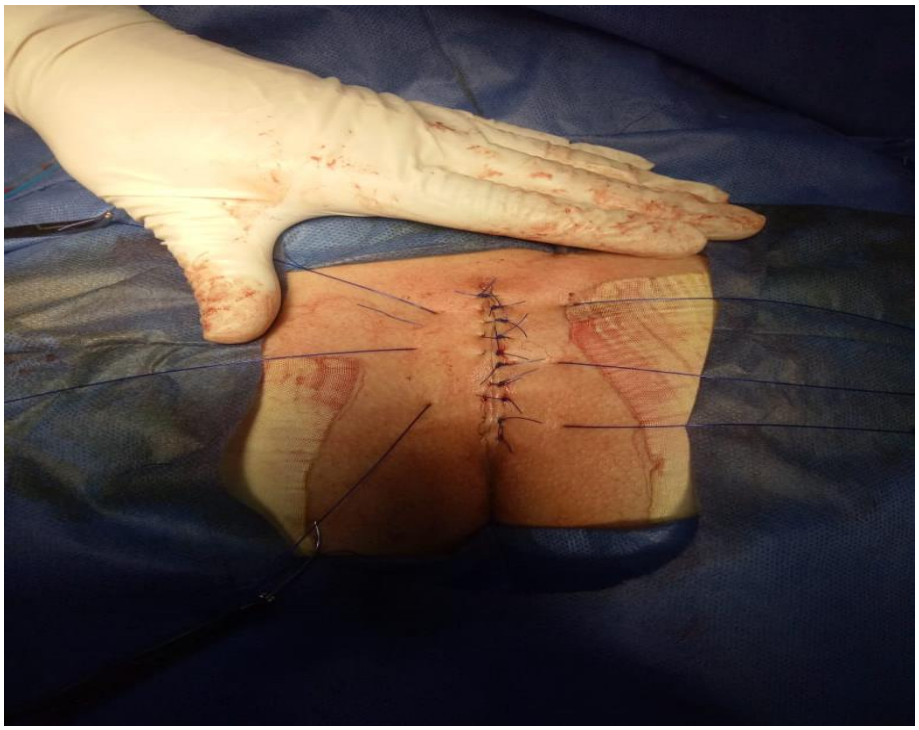

Figure (2): The skin closed by the aid of Prolene 3/0 sutures in simple or mattress stitches

Figure (3): The laid threads ligated over pack of gauzes to press the suture line and obliterate the dead space.

Most of patients in group **B** were discharged in the same day of surgery, while patients in group **A** were discharged usually at fourth or fifth day after the drain amount became less than 50 cc. Postoperative antibiotics and analgesics continued for one week after surgery. In group **B** tension sutures were removed in fifth day postoperatively and we checked the wound for any signs of infection or pus formation.

Wound sutures were usually removed between 10 to 13 days postoperatively in both groups. Patients then were advised to return to their usual life and were advised to use proper hygiene and hair removal continuously by shaving or by laser ablation at natal area. We also advised for regular follow up every 3 months to check for any recurrence.

Statistical analysis

Statistical software program SPSS for Windows (version 21) was used for data entry and analysis.

Qualitative data were presented by frequency and percentage whereas quantitative data were presented by mean and standard deviation (mean ± SD) and range. The student ***t*** test was used to compare 2 means. X^2 test was used to compare qualitative data, and P value < 0.05 was considered to be statistically significant.

RESULTS

There was no significant difference between both groups as regard age and sex **(Table 1)**.

Table (1): Demographic distribution of patient in both groups

	Group A (Usual Karydakis) N=35 n (%)	**Group B** (TIE Over) N=40 n (%)	**P-value**
Age			
Range	18-40	16-35	
Mean	27 ± 5	26.7 ± 4.6	0.473
Sex			
Male	32 (91.42)	38 (95)	
Female	3 (8.5)	2 (5)	0.468

All group **B** patients were discharged on the day of surgery, whereas the mean hospital stay for group **A** patients was 3.9. No patients in group **B** (0%) developed wound seroma, compared with 3 patients in group **A**. Two patients improved by repeated aspiration and oral antibiotics, and one patient was complicated by infection, which needed incision and drainage then dressed regularly until the wound healing achieved by secondary intention. One group **B** patient developed a superficial wound infection, whereas 4 patients in group **A** developed a wound infection. The average return to work time for patients was 12.6 days for group **A**., compared with 10.2 days in group **B**.

The median follow-up period was 18 months, with a minimum period of 6 months. (81.8%) from group **A** completed the minimal (6 months) follow- up period, whereas (77.9%) from group **B** did so. There were no recurrences noted in group **B** versus 3 cases of recurrence in group **A (Table 2).**

Table (2): Comparison between two procedures as regard post-operative data and outcome

	Group A (Usual Karydakis) N=35 n (%)	**Group B** (TIE Over) N=40 n (%)	**P-value**
Hospital stay in days	3.9 ± 2.4	1.0±0.18	0.000
Days to return to work	12.6 ± 4	10.2 ± 1.4	0.000
Seroma	3 (8.57)	0	0.012
Wound infection	4 (11.4)	1 (2.5)	0.029
Recurrence	3 (8.5)	0	0.012

DISCUSSION

Pilonidal sinus (PS) is known as one of chronic inflammatory diseases with acute exacerbations, which is considered as a worldwide health problem that affects mostly young males. Sacrococcygeal area is the most common site to be affected by such disease. It is characterized by high rate of recurrence [(6)].

Congenital and acquired factors playing an important role in the etiology and pathogenesis of PS. Many theories were used to explain the main etiology of the (PNS). The most accepted one suggested that PS starts as a chronic process as a result of lifeless hairs accumulation and subcutaneous hair deposition in the pilonidal region that leads to inflammation and infection [(7-12)].

Many conservative measures are used in management of pilonidal sinus. One of the most common is phenol injection that is simple and not invasive including removal of hair, curettage of sinus site and the injection of phenol to heal after several weeks but it has very high rate of recurrence so it is used only if patients are not fit for surgery. So the advantages of one-day surgery are neutralized by the recurrence and increased risk of additional surgery with a prolonged hospital stay [(8)]. The main goals of ideal surgery for pilonidal sinus should minimize the community and patient costs in the form of reduction of numbers of dressings and early return to work. It also should be with less postoperative complications and recurrences [(9)].

Open excision of pilonidal sinus lifting open gapped wound is usually associated with prolonged hospital stay time and prolonged postoperative follow up and dressings may be up to 3 months [(10)].

Anyanwu and colleagues had a study over 74 publications for treating pilonidal sinus, involving 10,090 patients, and their results were that asymmetrical flaps methods has low recurrence rate than that symmetrical flaps [(5)]. Karydakis flap either the usual one or that with tie over tension is considered as type of asymmetrical flap methods, which also includes rhomboid, Z-plasty, and V-Y flaps [(1)].

The Karydakis procedure has advantages on other asymmetrical flap methods as it includes complete excision of sinus from the midline, rapid healing time, easy to learn for juniors, a short convalescence, and a very low recurrence rate [(8)]. Most common complications after Karydakis procedure includes seroma, hematoma and infection that may occur with the Karydakis procedure, these complications may lead to wound disruption at the site of skin closure. Infection is the most common cause of wound disruption [(9)].

In our study, we attempted to focus on the advantages and drawbacks of usual Karydakis procedure and to compare it with the procedure of Karydakis with tie over pressing sutures. Usual Karydakis was characterized by its easy technique in relative to other asymmetrical flap methods, also wound healing was rapid with low recurrence rate if compared with symmetrical flap techniques. Tie-over pressing

sutures was used to decrease the dead space in which seroma and fluid were collected, supporting the suture line during walking, allowing for earlier ambulation and prevention of disruption of the wound[11].

The mean hospital stay for patients undergoing usual Karydakis method was 3.9 ± 2.4 days. But patients undergoing the tie-over technique (group **B**) were discharged on the same day of surgery, with lower financial and psychological burden. Karydakis, the one who described the technique, reported hospital stay of 3 days, while, in some other series, the average hospital stay was 4 to 5 days; for example a recent study in India done by **Kumar and Sutradhar**[7] and another study by **Kitchen *et al.*** [8]. Patients in that study were discharged on the fourth or fifth postoperative day, with median hospital stay of five days.

Keshava *et al.*[1] found that mobilization of the wound edges, seroma, and local bacterial flora are the factors that contribute for wound infection. In order to avoid those factors of wound infections, antibiotics were prescribed for all patients in both groups until the end of the first postoperative week. Also patient were advised for local personal hygiene and avoid sudden movements.

In tie over technique the wound was supported by tension sutures so patient could be discharged in the same day of surgery without fear of wound dehiscence or infection secondary to early mobilization [7].

In the current study, early complications were noted in four patients with wound infection in group **A** and one patient in group **B**, who was treated by antibiotics and daily dressing with complete recovery and healing in about 3 to 4 weeks. No patients in group **B** (0%) developed wound seroma, compared with 3 patients (8.57%) in group **A**. Two patients improved by repeated aspiration and oral antibiotics, and one patient was complicated by infection, which needed incision and drainage then dressed regularly until the wound healing was achieved by secondary intention. In other studies of the usual Karydakis procedure reported complication rate was 8%, mainly related to infection and fluid collection [10]. A complication rate of 18.7% was reported in a study **Keshvari *et al.***[11], while **Keshava *et al.***[1] study reported a minor wound complication rate of 38%, and a complete wound dehiscence rate of 8.4%. **Kumar and Sutradhar**[7] reported a seroma formation rate of 20.3% and a wound infection rate of 5.8%.

After follow-up period of 18 months, with a minimum period of 6 months, (81.8%) from group **A** completed the minimal (6 months) follow-up period, whereas (77.9%) from group **B** did so. There were no (0%) recurrences noted in group **B** versus 3 cases (8.5%) of recurrence in group **A.** In other similar studies, the recurrence rate after the usual Karydakis procedure ranged from 0% to 4.2% [7,8,11]**.**

In our study the average time to return to work was 12.6 ± 4 days in group **A** compared to 10.2 ± 1.4 in group **B.** Other studies on usual Karydakis operation for (PsD) reported different results as in **Akinci *et al.***[12] study, the period of return to work average was 12.4 days, compared to another study of **Yildiz *et al.***[3] in which the period of work absence was 15 days.

CONCLUSION

Tie over with pressing interrupted sutures for management of pilonidal sinus is safe, one day case surgery, with less complications and with early return to ordinary life and work in comparison to usual Karydakis operation.

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