

ORIGINAL ARTICLE

Pilonidal Sinus: A Comparative Study of Open Versus Closed Methods of Surgical Approach

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ABSTRACT**Objective:** To compare the outcomes of open and closed technique in surgical management of Pilonidal Sinus.**Study Design:** Randomized control trial.**Place and Duration of Study:** All three Surgical units, at Ayub Teaching Hospital, Abbottabad, Pakistan from 1st April 2006 to 31st December 2015.**Materials and Methods:** A total of 65 patients with Pilonidal Sinus presented at Out Patient Department were included. Detailed history, general physical and systemic examination especially sinus area were done along with laboratory investigations. The patients were divided into two groups; patients in group I were managed by open technique and those in Group II were managed by closed technique. All patients were called for review at 01, 06, 12, 18 & 24 months interval to check for the recurrence and complications.

The data was entered on SPSS 22.0 for analysis.

Results: A total of 65 patients with Pilonidal Sinus disease were included in the study. Wound infection and dehiscence was found in 0.76% patients managed with close technique and in 5.17% patients managed with open technique. Similarly Recurrence rate in close technique were also found more i-e 12.06% while in Open technique only in 03.44%.**Conclusion:** The management of Pilonidal sinus is a surgical challenge. Both techniques are effective but the open technique is better option as compared to close technique because of low recurrence and wound dehiscence rate.**Key Words:** *Close Technique, Open Technique, Pilonidal Sinus, Wound Dehiscence, Wound Infection.***Introduction**

The word Pilonidal sinus, piliferous cyst, pilonidal cyst or fistulas are synonymous and derived from latin word meaning nest of hairs. The sinus forms when hair puncture the skin and embedded in it and mostly found at cleft of the buttocks. Infected pilonidal disease affects approximately 0.7% of the population¹ Surgery is the definitive treatment of the disease. There are two methods of surgery i-e; open and closed method. The open method includes excision of the tract without primary closure but healing occurs by secondary intention however, in closed method the tract is excised with primary closure or closure by some other means designed to avoid a midline wound like Z- plasty, Karydakis procedure, Bascom's procedure.²

In meta analysis of Iain J et al on 12 trials found that Wounds heal more quickly after primary closure than after open healing but at the expense of increased risk of recurrence.³ R. Dudink on his comparative analysis of 63 patients found that close technique is better than open technique. The primary management should be close technique. While open technique with wide local excision should be avoided.⁴ Loran et al did another randomized controlled trial on 80 patients and found that sinus excision and primary closure results in faster healing than laying open does, but there is no difference in healing rate after 1 year.⁵

Bariş Saylam et al used 4 different surgical interventions for management of pilonidal sinus. i- total excision + primary closure, D-flap, Karydakis technique and Limberg flap. They concluded that there is no statistically significance in terms of wound recurrence.⁶ BarişSevinçet al did a trial on 150 patients and found that off line midline closure is superior than midline closure in terms of wound healing and recurrence.⁷ Calikoglu et al did a comparative analysis of using phenol injection and excision with secondary wound healing. They observed that phenol injection is better option in

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Funding Source: NIL; Conflict of Interest: NIL
Received: Oct 12, 2016; Revised: Jan 21, 2017
Accepted: May 15, 2017

terms of wound healing as compared to open technique but they didn't analyzed the recurrence rate.⁸ Different techniques were used for the management of this disease like the use, of fibrin glue⁹, minimally invasive video-assisted ablation of pilonidal sinus¹⁰, use of platelet-rich plasma¹¹, Excision and primary closure of sacrococcygeal pilonidal sinus using suction drain¹², spinal versus general anesthesia¹³ and Semi-closed surgical technique¹⁴. A lot of interventions done for the management of pilonidal sinus but still there is no universal acceptance of a single procedure to be carried out. Each procedure having its own advantages and disadvantages.

Pilonidal sinus are very common in our society and till time to best of our knowledge no single specific study regarding the proper recommendation of surgical option of choice for this pathology found in our setup. The findings of this study will be recommended for future management of Pilonidal sinus and will help the surgeons. The main aim of this study was to compare the outcome of both techniques in terms of wound healing, recurrence, wound infection and Dehiscence.

Material and Methods

This prospective randomized controlled trial using non probability consecutive sampling technique was carried out on 65 patients at 03 Surgical Units of Ayub Teaching Hospital Abbottabad from 1st April 2006 to 31st December 2015. The study was started after approval from the hospital ethical committee and permission from the concerned departments. All patients of either gender presented with symptoms suggestive of chronic Pilonidal Sinus disease (intermittent pain, swelling and discharge at the base of the spine), confirmed by clinical examination were included in the study. Patients selected for the study were randomly placed into two groups i-e Group-I comprised of patients planned to undergo open while Group-II included patients planned to undergo closed technique of surgery. The patients with acute sinuses or recurrent sinuses or who refused to be a part of this study or lost in follow up or having some other pathology were excluded from the study. After admission, all the patients were operated on elective list. The patients were placed in prone / Jack-Knife positions under Local Anesthesia in most and Spinal

Anesthesia in some cases. Presence of more than one sinus tracts per-operatively was assessed with a blunt probe. In Group-I patients sinus along with its tracks (judged by probe) was excised through a midline elliptical incision up to sacral fascia. Totality of pathological tissue removal was confirmed and if any much left-over residual tissue found, it was removed. Similarly in Group-II patients probe guided adequate elliptical excision (taking margins of normal tissue) around the sinus was ensured. In Group I patients the wound were left open and pyodine soaked dressing was done while in Group II, the wound was allowed to close by primary healing. All the surgeries were performed by same group of surgeons and patients were discharged on analgesics and antibiotics on 2nd post-op day with the advice for daily dressing for Group-I patients and every alternative day Group-II patients. All patients were called for review at 01, 06, 12, 18 & 24 months interval, mainly to check for the recurrence and complications. Initially all the data were entered on a preformed proforma and then were put in SPSS 22.0. T-test was applied in comparison of complications of both groups. Frequencies and percentages were calculated. Data represented in table where necessary.

Results

A total of 65 patients with Pilonidal Sinus disease were included in the study. 49 (75.38%) were male and 16 (24.62%) were female patients. Male to female ratio was 3.06:1. Mean age was 24.5 years while the range being 19 – 33 years. Mean age for Group-I patients were 25.3 with range from 19 – 33 years while the mean age of Group – II patients was 24.1 with range from 21 to 32 years. Group-I (open technique) comprised of 33 and Group-II (closed technique) of 32 patients.

Most of patients presented with the symptoms of (intermittent pain, swelling and discharge at the base of the spine) followed by temporary remission, total being 57 (87.69%) including 30 (90.9%) from Group-I and 27 (84.37%) from Group-II. Other presenting symptom was painless, foul smelling discharge of the remaining patients. 63 (96.92%) patients in both groups presented with single sinus opening while 02 (3.07%) were having multiple openings. All of 65 (100%) patients were having their sinus openings in the midline. 15 (23.07%) patients were found (with

the help of probe) to have lateral extensions of the main track, including 09 (27.27%) patients from Group-I and 06 (18.75%) from Group-II.

Mean healing time for Group-I was 20.46 days (range 17 – 28 days) and 13.50 days (range 10 -15 days) for Group-II. Unhealed wounds were managed with daily dressing. Patients were called for follow-up at 01, 06, 12, 18 & 24 post-op month (total 05 visits) to check for recurrence, healing and wound infection OPD consultation visits and telephonic contacts in some cases were used to call patients for follow-up visits in our study. The mean follow up were 29.50± 5.30 months. 6(10.76%) patients from Group 11 presented with Wound infection and wound dehiscence and 7 (12.06%) patients with recurrence as compared to 03(5.17%) and 02 (03.44%) patients from Group 1 which was statistically significant $p < 0.005$. (Table I)

Table I: Surgical outcome of Group I (open) and Group II (close)

Outcome Variables	Group I	Group II	P value
Blood loss in ml	95±15.50ml	105±25.0ml	0.045
Mean hospital stay	4.74±1.84 days	3.64± 1.52 days	< 0.005
Surgery time in mins	63.5±20.5 mins	74.8±32.5mins	0.025
Mean Healing Time in days	20.46 (range 17-28)	13.50(range 10-15)	<0.005
Wound infection and dehiscence	3(5.17%)	6(10.76%)	<0.005
Recurrence rate	2(03.44%)	7(12.06%)	<0.005

Discussion

Type of pilonidal sinus surgery is still an enigma in the modern world of robotic surgeries. Controversies exists either to use the open or close technique. The open technique having its own advantages and disadvantages and vice versa for close technique. Aim of the treatment in Pilonidal Sinus disease is to heal the Sinus, as early as possible either by open healing method or primary closure and to avoid the risk of recurrence and other complications. In our study we therefore divided the patients into two groups, to exactly know the outcome of both the procedures. The main advantages with the open technique is the less recurrence rate, low surgical time, low wound dehiscence and wound infection rate as observed in our study. However the disadvantages are its daily dressing, long healing

time and more hospital stay, as observed in our study. Many treatments and approaches had been discussed for its management from time to time but still no consensus could be developed regarding its satisfactory management. Pilonidal disease is an infection under the skin in the gluteal cleft, which is a common source of morbidity and loss of work productivity in healthy young adults.¹⁵ Ideal treatment of Pilonidal sinus still remains to be the topic of debate and controversy. A large number of surgical techniques (with varying complexity) have been described in the literature for the treatment of this disease, each method has its own advocates.¹⁶ Primary closure of pilonidal sinus tract following complete excision has been described by many authors with some kind of variation to closure method. The ideal surgery should be simple, with short hospital stay, a low recurrence rate, associated with minimum pain and wound problems. It should also be cost effective. None of the surgical procedures of Pilonidal Sinus proved to be ideal with respect to results of wound infection, wound dehiscence or recurrence.

Shahida et al did a comparative study on 40 patients. They found a statistically significant difference in terms of hospital stay, wound healing and recurrence rate between the two groups, similar to our findings. However the mean healing time in our study for open technique was 17 – 28 days and 10 -15 days for close group while in their study technique wound healing time with open technique was 22-42 days and with close technique was (9-11 days). These healing times are much longer than our findings. Similarly the wound infection and recurrence rate were 10% and 11.11%.¹⁷ which were nearly similar to our study .Mohamed et al did a comparative study using three different surgical interventions i-e wide excision and left wound open, limited wide excision and left wound open and excision with primary closure. They observed significant difference in terms of hospitalization and operative time but they didn't observe any significant difference in terms of complications among all three groups.¹⁸

Mehmet Füzün et al did a comparative study on 110 patients. They found that the hospital stay is longer in patients who were managed with closed technique. Similarly the wound infection and recurrence rate were not significant among both

groups. These findings are against to our observations. The main reason for longer hospital stay for the close group were to observe for a longer time for any complication.¹⁹ Anees K Nile et al did a comparative study on 60 patients and found that the hospital stay with open group was lesser as compared to closed group. Similar findings of Mehmet et al study. However there is significant difference in terms of complications like wound healing and recurrence in both groups which is similar to our findings.²⁰ M. Testini in their study found no statistically difference in both surgical intervention.²¹ Mahmoud Sakr et al found that complications is not due to the type of surgical intervention but it is the obesity which causes morbidity. The complications of surgical interventions in management.²² Ahmed AL-Khamis et al did a meta analysis on 17 trials and observed no significant difference in both groups in terms of complications. However for close group, the best option is off midline closure rather than midline closure.²³ Similarly Iain McCallum did a meta analysis of 18 trials and found no significant difference between two groups.²⁴

There are certain limitations in our study. First, we used probe for the identification of tract and no other advanced investigations .This may result in missing of sinus in whom there are more than one tract. Moreover we did not use different flap procedures in closed technique for more significant results and advanced techniques like use of phenol, vacuum assisted technique etc. So, further studies like the use of dye for the identification of different tracts and different flap coverages needed for better results in our setups.

Conclusion

The open technique for the management of pilonidal sinus is better option in terms of wound infection, wound dehiscence and recurrence rate as compared to close technique. The only significant drawback for open technique is the long healing time, which can be compensated easily considering its advantages.

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