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# PILONIDAL SINUS; PREVALENCE AND COMPARISON OF EXCISION AND PRIMARY CLOSURE WITH LAY OPEN PROCEDURES

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**ABSTRACT... Objectives:** To study the prevalence of pilonidal sinus and compare the outcome of the excision and primary closure with lay open surgical procedures. **Design:** Prospective randomized comparative study. **Setting:** Department of surgery, Bahawal Victoria Hospital Bahawalpur. **Period:** From 1<sup>st</sup> December 2002 to 30<sup>th</sup> November 2007. **Materials and Methods:** A total of 40 patients with pilonidal sinus were randomized into two groups. Group I underwent excision and primary closure while Group II underwent excision and lay open procedure. **Results:** Patients of Group I & II had comparable mean operation time of 42.7 minutes. Group I patients had a shorter mean hospital stay of 4.87 days, earlier return to light work after 13.21 days, less treatment expenses and low rate of postoperative complications and good patient satisfaction. **Conclusion:** We conclude that primary closure after excision of pilonidal sinus is superior surgical procedure than excision and laying it open.

**Key words:** Pilonidal sinus. Excision and primary closure. Lay open procedure.

## INTRODUCTION

Pilonidal sinus is an uncommon surgical problem exclusively seen in young hairy male drivers or men sitting on seats for a longer duration. It is an infected tract with tufts of hair projecting from its mouth extending into subcutaneous planes commonly occurs at sacrococcygeal area and rarely in the interdigital clefts of hairdressers or in the axilla, umbilicus, pubic area and any other spinal region. The literature favors more for its acquired origin than a congenital entity. It is one of the commonest sinuses seen in surgical practice thought to arise from loose hair shafts shed from the body and entangled in natal cleft usually<sup>1-3</sup>.

Pilonidal sinus is initially, may be indefinitely noticed as minimal painful reaction typically in over weights having sedentary life style with poor hygiene. With the onset of secondary infection, it may transform into complex/recurrent sinus with branching tracts to the pilonidal cyst or abscess. Constitutional symptoms are variable. Thorough examination with investigations to exclude associated pathologies is recommended<sup>1-6</sup>.

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Pilonidal sinus disease needs definite surgical treatment. There are many surgical procedures ranging from simple shaving, excision & laying it open to wide excision with complex flap repairs including Karydakis and Bascom's repair having their own drawbacks. Postoperative infection is variable but recurrence rate is high<sup>7-9</sup>.

The present five years study of 40 cases was aimed to select a treatment protocol that must be simple, acceptable to the patient in terms of discomfort, economical, least rate of complications and recurrence and secondly to enable the patient to resume work and normal social activities as early as possible.

### **PATIENTS AND METHODS**

This was a randomized comparative study prospectively conducted at the Department of Surgery Bahawal Victoria Hospital Bahawalpur. The study was carried out for a period of five years from first December 2002 to 30<sup>th</sup> November 2007 and included 40 patients of pilonidal sinus disease of either gender. Thirty-eight patients were admitted through surgical out patient department and two were referred from medical department.

The diagnosis of the disease was made absolutely on detailed history and a thorough physical examination. All basic laboratory investigations including pus for culture sensitivity were carried out. Three patients with recurrent pilonidal sinus operated at various centers and five with uncontrolled diabetes or hypertension were excluded from the study. However, two patients shifted from medical units after diabetes control were included in the study. Seven patients presenting with acute abscess were drained at the out door dressing room and active infection was controlled with broad-spectrum antibiotics before their enrollment in the study.

All the patients had shaving on the day of the operation and received 1 gm of cephadrine I/v 1 hr before surgery. The procedures were performed under general anesthesia and patients were intubated on trolley and shifted on the operation table to make Jack knife position. Buttocks were strapped wide and the sacrococcygeal region was prepared by painting with povidone iodine three times and cleaned with spirit prior to draping. Sinuses were probed and methylene blue was injected

into sinuses.

An elliptical incision about 0.5 cm around the sinuses was made. Dissection was done with cutting cautery until the entire debris with tufts of hair and the entire tracts were excised in toto. The wound was washed with a plenty of 0.9% N/S, haemostasis was secured and then two different protocols were devised for the further management of the disease, which were as under:

#### **GROUP- I**

In 20 patients, the skin flaps were undermined suction drain was left in the wound brought out through a separate incision and tension sutures were laid and wound closed in layers asymmetrically. Tension sutures were tied over gauze. Drains were removed between 2<sup>nd</sup> to 4<sup>th</sup> postoperative days depending upon the amount of drainage. Tension sutures were removed on the 5<sup>th</sup> day and the patients were discharged. Follow up was on the 10<sup>th</sup> day in OPD for removal of skin stitches.

#### **GROUP-II**

In these 20 patients, after wide excision the wound was packed with povidone-socked gauze and left open after pressure dressing. The gauze was removed from the wound cavity after 24 hours and then daily antiseptic dressings were started to let the wound granulate. The patients were discharged on 5<sup>th</sup> to 24<sup>th</sup> postoperative day and advised daily antiseptic dressings on OPD basis.

The patients of both the groups had I/V antibiotics for 48 hours then changed to oral antibiotics according to culture sensitivity. All the patients were regularly followed up in the OPD on weekly basis for 8 weeks and then monthly for 6 months.

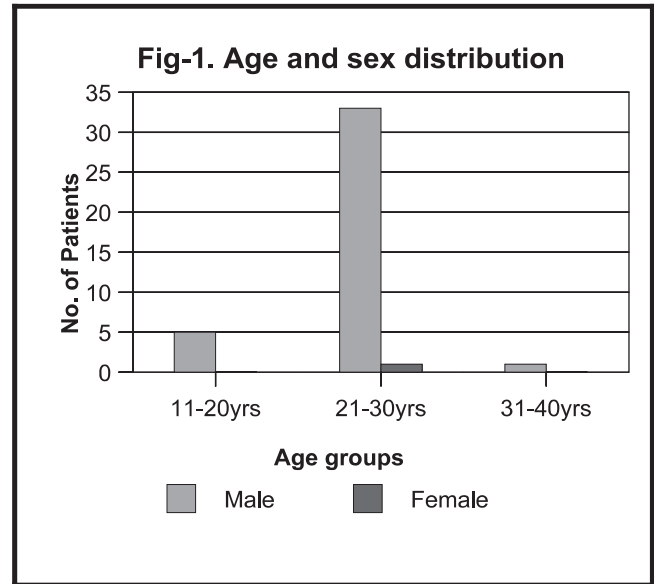
The outcome of these groups was sequentially assessed on prescribed Performa for six months about different variables like complications, duration of recovery, return to their job activities, cost effectiveness, recurrence and patient satisfaction. The results were analyzed by SPSS 11.0 version. Means and standard deviations of various parameters of both the groups were calculated and compared by t-test.

**RESULTS**

11265 patients attended the surgical out patient department of unit II Bahawal Victoria Hospital Bahawalpur from 1<sup>st</sup> December 2002 to 30<sup>th</sup> November 2007, out of which 48 were of pilonidal disease with a relative frequency 0.43%. Among these 40 patients (0.36%) were included in the study. The remaining 8 patients not fulfilling the selection criteria were rejected. 38 patients were referred from the general practitioners and 2 were shifted from medical units after control of diabetes. The age ranged from 16 to 32 years with a mean age of 23.5 years. Most of the patients entitled in both groups of study were in the 3<sup>rd</sup> decade of their life (85%) and majority was exclusively hairy males (97.5%) with male to female ratio 39:1 (Fig. I).

Although majority of the patients 16 (40%) were college or university students but among the others 9 (22.5%) were drivers, 6 (20%) shopkeepers, 2 (5%) barbers, 2 (5%) clerks, 3 (7.5%) disabled and two (5%) were miscellaneous including one housewife lady. Twenty-two (55%) patients were overweight and 18 (45%) were of moderate built and nutrition. The sacrococcygeal region was the commonest (92.5%) site and in most (75%) of

the patients the pilonidal disease presented in the chronic form. The average duration of symptoms in 87.5% patients was within two years (Table II).



**Table-II. Type, site and duration of presentation.**

Type	N	%age	Site			Duration		
			SCR	IDC	UB	≤ 1 Yr	≤ 2 Yr	≥ 2 Yr
Simple pilonidal sinus	04	10%	04	00	00	02	02	00
Acute pilonidal disease	06	15%	05	00	01	06	00	00
Chronic pilonidal disease	30	75%	28	02	00	06	15	09
Total	40	100%	37 (92.5%)	02 (5%)	01 (2.5%)	14 (35%)	17 (42.5%)	09 (22.5%)

*N = No. Of patients, SCR = Sacrococcygeal region, IDC = Interdigital clefts, UB = Umbilicus*

The wound after excision in Group I was primarily asymmetrically closed in the midline by lateral advancement flaps in 80% of the cases, Z- plasty in 10% and by Karydakis procedure in 10% cases. Overall complication rate in both groups combined was 30% and most of these patients reported multiple complications. Wound infection and postoperative pain or itching over

the site of lesion was the major complications noticed in both groups of study (Table III). The proportion of wound infection, persistent pain is significantly larger in Group-II than Group-I as p-values are 0.001, 0.011 respectively. The relative risk of wound infection is more than 10 times as high among Group-II than among Group-I.

**Table-III. Comparison of postoperative complications**

Complications	Group-I (n=20)	Group-II (n=20)	p-value	Odds ratio
Wound infection / disruption	3 (15%)	13 (65%)	0.001	10.53
Persistent pain / itching	4 (20%)	12 (60%)	0.011	5.98
Recurrence	1 (15%)	2 (10%)	0.548	1
Patient satisfaction	18 (90%)	9 (45%)	0.002	11

*N for total number of patients in a group.  
Note: Many patients suffered multiple complications.*

Similarly the relative risk of Persistent pain is 6 time as high among Group-II than among Group-I. The proportion of recurrence is statistically same for both groups as p-value is 0.548. The proportion of patient satisfaction is significantly larger in Group-I than in Group-II as p-value is 0.002. The estimated odds ratio is 11 which means Patient satisfaction is 11 time more among Group-I than among Group-II. The mean operation time was statistically significant, 39.15 in-group I and 45.35 minutes in-group II with p value 0.000. The outcome of study revealed significantly less mean hospital stay, less duration to return to the light work and less overall cost of treatment for Group I than Group-II with p-values 0.000 (Table IV). Overall 90% patients entitled in Group-I were satisfied by the treatment.

**Table-IV. Comparison of ultimate factors between two procedures**

Variables	Mean (SD)	P value
Operation time (min)		
Group I	39.15 (2.27)	0.000
Group II	45.35 (2.61)	
Hospital stay (days)		
Group I	4.87 (1.21)	0.000
Group II	9.68 (3.41)	
Return to work (days)		
Group I	13.21 (3.21)	0.000
Group II	22.17 (5.93)	
Overall cost (thousands)		
Group I	4.51 (1.24)	0.000
Group II	8.24 (3.68)	

## DISCUSSION

Hodges used the name "Pilonidal" for the first time in 1880 while describing such pathology in sacrococcygeal area. The origins of the pilonidal disease had been debated over a century and before mid 1940, most practitioners believed that the cause of pilonidal sinus was congenital. Buie called the disease as "Jeep Disease" after its observation of overt incidence in driver soldiers during 2<sup>nd</sup> world war. Patey and Scarff proposed the now generally accepted theory that pilonidal disease is acquired. Bascom demonstrated multiple stages in the development of pilonidal disease through microscopic studies<sup>4,10-13</sup>.

The relative frequency of pilonidal disease in our surgical outpatients remained 0.43% with male to female ratio of 39:1. This low incidence is in accordance to the study of Berry DP that the condition is common in Caucasians than Asians and Africans<sup>14</sup> but much less than Sondanaa K<sup>15</sup> et al who have mentioned its incidence as high as 1.2% with male to female ratio of 10:1 in a study of 50,000 students. This gross disparity of sex distribution to other studies is possibly reflecting under reporting in our female population and secondly many of these patients are asymptomatic as has been mentioned by Sondanaa. The incidence of the disease is high in 3<sup>rd</sup> decade of life is further favored by our study that 85% cases were in their twenties. 55% were students and 40% were overweight in our study, these results are in consistent to the conclusion of Berry DP that pilonidal disease is common in young obese students with sedentary workings<sup>14</sup>. The commonest site of the disease is in the sacrococcygeal area in its chronic variety worldwide as narrated in the literature. The present study

is also in evidence that 92.5% of the patients presented with sacrococcygeal pilonidal disease and 75% cases were in the chronic form (Table II).

Despite the variety of surgical techniques proposed for the treatment of pilonidal disease, complications like postoperative infection and recurrence remains a common occurrence. Relatively few data exist that focus on an optimal surgical approach that should be followed especially for complex disease and still the debate goes on as discussed by Chintapatla S et al and Aytakin<sup>16,17</sup>. Our study focuses and compares the outcome results of two basic surgical procedures that are simple and practically applicable. Although in Group I, various surgical procedures were adopted for the primary closure of wound after excision of the sinus but in most (80%) of the cases a random method was adopted to achieve asymmetric midgluteal cleft closure technique as was recommended by Theodoropoulos et al<sup>18</sup>.

The reported rate of postoperative complications although variable, is up to 40%. Overall 30 % of our patients included in both groups developed the complications that are significantly less than the reported literature<sup>3-5,16,18</sup>. Buie was first to advocate the management of pilonidal sinus by lay open surgical procedures which was further supported by the study of Bissett that complications rate can be reduced by excision and marsupialization<sup>13</sup>. The postoperative pain or itching remained the chief complication (40%) in both the groups. It is worth mentioning here that this rate although is comparable to the 38% of Buie but 60% of our patients in group II developed discomfort at the excision site persistently (Table III) which is too high than 25% rate of Mann and Springall<sup>19</sup>. The disparity of results as mentioned above had remained a topic of discussion but we are in the opinion that the complications rate may vary from individual to individual and center to center depending upon their local circumstances.

The wound infection or even dehiscence rate in group I remained less than group II (Table III) although not supported by most of the global studies but is in

consistent with the results of Allen Marsh and Benfatto et al<sup>9, 20</sup>. This was possibly due to the placement of drain after primary closure although no antiseptic solution irrigation was done postoperatively as suggested by Holzer et al and Tritapepe<sup>21,22</sup>. The 15% rate of infection in group I can be reduced to the 4.5% infection rate of Holzer's study by using antiseptic irrigation drain after primary closure of wound.

The recurrence rate in a short median follow up of six months in group I cases remained 5%, half of the recurrence in group II that is comparable to the studies of Arumugam et al and Eryilmaz et al with reported recurrence rate of 7% & 3% respectively<sup>23,24</sup>. Theodoropoulos and Aytakin has reported no recurrence in a 6 months follow up in their studies of primary wound closure by modified Bascom's and v-y advancement flaps<sup>17,18</sup>. This disparity in recurrence apparently is the result of significantly prolonged time off from work of average three weeks in their military men patients in contrast to ours low socioeconomic class who had to return to their jobs within two weeks (Table IV). It should be noted that 63% patients in Eryilmaz study were not pleased because of persistent numbness and cosmetic appearance of the scar in contrast to our only 10% and 55% patients who showed dissatisfaction respectively in group I & II (Table III).

The hospital stay and overall expenditures in group I were significantly low than group II patients with p value of 0.001. Even mean hospital stay of 4.87 days in our patients who underwent primary closure is comparable to the 3.5 days, 6.2 days mean hospital stay in the studies of Tritapepe and Kitchen P respectively<sup>22,25</sup>. Although the mean hospital stay of 22.17 days in our patients underwent lay open procedure is comparable to 21.9 days hospital stay reported by Aldemir M et al<sup>26</sup> but it is worth mentioning here that these lay open surgical procedures affect much predominantly the young population causing significant time off work.

## CONCLUSION

The primary closure of the wound after excision of pilonidal disease which affects the young male population predominantly is a superior surgical procedure than laying the wound open in regard to less hospital stay, low complications rate, early return to physical work, cost effectiveness and patient satisfaction.

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