

## COMPARISON OF KARYDAKIS TECHNIQUE WITH LIMBERG FLAP PROCEDURE FOR SACROCOCYGEAL PILONIDAL SINUS DISEASE IN TERMS OF HOSPITAL STAY AND WORK LOSS

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### ABSTRACT

**Objective:** To compare Karydakis technique with Limberg flap procedure for sacrococcygeal pilonidal sinus in terms of mean period of hospital stay and return to normal activity (mean number of days).

**Study Design:** Randomized controlled trial.

**Place and Duration of Study:** Surgery department, Military Hospital /Combined Military Hospital Rawalpindi, Frontier Corps (FC) Hospital Quetta from July 2010 to July 2014.

**Material and Methods:** A total of 150 patients (75 patients in each group) were recruited in this study by consecutive non-probability sampling. In group-A Karydakis technique was used while in group-B Limberg flap procedure was done. Data were analyzed using SPSS version 16 and by applying 't' test.

**Results:** Comparison of mean period of hospital stay shows mean hospital stay  $2.93 \pm 0.66$  days in group-A and  $3.97 \pm 0.71$  days in group-B ( $p=0.001$ ). Similarly mean work loss was  $13.13 \pm 1.15$  days in group-A and  $15.53 \pm 1.22$  days in group-B. Significant difference was noted between two groups ( $p=0.001$ ).

**Conclusion:** Karydakis technique, in treatment of pilonidal sinus disease is better in terms of short duration of hospital stay and less work loss. Karydakis procedure should be the preferred method in treatment of sacrococcygeal pilonidal sinus.

**Keywords:** Karydakis technique, Limberg flap, Pilonidal sinus, Sacrococcygeal.

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### INTRODUCTION

Mostly young, healthy and hairy males are affected by sacrococcygeal pilonidal sinus disease<sup>1</sup>. The estimated incidence is 26 per 100,000 people<sup>2</sup>. The disease more commonly affects young adults between 17 to 38 years. Males are affected twice as compared to females<sup>2</sup>.

Hodges named the term Pilonidal in 1880. Mayo described this condition in 1833. During World War II it caused more than 80,000 US Army soldiers to be hospitalized and accounted for 4.2 million sick days<sup>3</sup>. It causes discomfort that may interfere with daily life and employment, sometimes for prolonged periods. There are conflicting views about etiology of pilonidal sinus disease. Firstly it was thought to result from the congenital disposition but with time, the view shifted towards acquired theory.

Strongly associated etiological factors are local trauma, excessive hair, poor personal hygiene and presence of deep natal cleft (as in obese). Hair acts as foreign body resulting in inflammatory reaction ultimately leading to localized infection which may manifest as abscess or sinus formation<sup>4</sup>. It appears most frequently in sacrococcygeal region. Patients present with pain, swelling and discharge when the sinuses become infected. Interestingly, pilonidal disease has also been reported to occur between the fingers of sheep shearers, dog groomers, cow milkers and barbers<sup>5</sup>.

Although, various treatment methods including surgery are options, but its management is still unsatisfactory for the last one century. The aim of ideal management option should be minimum morbidity through effective wound healing and decreased recurrence rates. It should also aim at minimum hospitalization period and fewer wound management issues<sup>6</sup>. At present various options as conservative

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Received: 18 Dec 2014; revised received: 11 Mar 2015; accepted: 13 Mar 2015

management, opening of track, wide local excision, excision with primary closure and limited excision are various options.

Various techniques are being used in different hospitals in Pakistan. By conducting this study we will try to find out a superior technique for treatment of sacrococcygeal pilonidal sinus disease so that we can recommend its implementation.

The objective of the study was to compare Karydakis technique with Limberg flap procedure for pilonidal sinus (sacrococcygeal) in terms of mean period of hospital stay and return to normal activity in terms of mean number of days.

## **MATERIAL AND METHODS**

Randomized controlled trial was conducted at the Surgery Department, Military Hospital Rawalpindi / Combined Military Hospital Rawalpindi, Frontier Corps (FC) Hospital Quetta from July 2010 to July 2014. All patients more than 12 years of age and clinically diagnosed as case of pilonidal sinus were included in study, patients having recurrent pilonidal sinus (based on history), diabetes mellitus and pilonidal abscess were not included. Total 150 patients were included in study: 75 patients in each group by using consecutive non-probability sampling. In group-A Karydakis technique was used while in group-B limberg flap procedure was done.

Approval from hospital ethical committee was taken. Patients were randomly allocated to group-A (Karydakis Technique) or group-B (Limberg Flap Procedure) through lottery method. All patients were informed preoperatively about the nature of disease, surgical procedure and complications. They all were operated by a consultant surgeon. Descriptive statistics were like frequency and percentage calculated for qualitative variables like gender, for quantitative variables like age, duration of hospital stay, work loss, mean  $\pm$  SD was calculated. Independent samples 't'-test was applied to compare mean hospital stay and mean work loss in two groups. Data were entered in

SPSS version 16,  $p$  value $<$ 0.05 was considered significant.

Karydakis technique was used starting as an asymmetrical elliptical incision 5cm long was made around the sinus. Whole of elliptical incision including sinus was excised down to sacrococcygeal fascia. Each end of the incision was about 2 cm from midline. Medial flap close to the midline was dissected free of underlying tissue and was closed primary off midline by 2-0 polypropylene sutures. Vicryl was used in single interrupted layer to close subcutaneous tissue. Aim was to create an asymmetrical thick flap across intergluteal cleft to make cleft shallow and away from midline. Redivac drain was placed.

Limberg flap procedure was started after excision of the pilonidal focus by a rhomboid shaped incision including all of the sinus orifices; a Limberg transposition flap on either side was prepared incorporating the gluteal fascia. This was transposed medially and approximated full thickness including the post sacral fascia by 1-0 polypropylene interrupted sutures. Redivac drain was placed.

Patients were followed closely during hospital stay with regular change of dressing and to look for any complication of wound. Patients were discharged on 3rd to 5th post op day depending upon wound condition. Drain was removed before discharge. Patients were asked to return for follow up after 1, 2 and 4 weeks from the day of discharge. Operative time was considered from the start of incision to the application of last stitch. Hospital stay was taken from the day of admission to the day of discharge. Return to work from the day of discharge to the day of joining work. All this information was collected through a specially designed structured proforma.

## **RESULTS**

A total of 150 patients were included in this study during the study period of four years from July 2010 to July 2014. Majority of the patients were between 20 to 40 years of age in both groups. Mean age of the patients was  $33.6 \pm 9.7$

years and  $32.2 \pm 9.8$  years in group-A and B, respectively.

In group-A, 62 patients (82.7%) and in group-B, 65 patients (86.7%) were males while 13 patients (17.3%) from group-A and 10 patients (13.3%) from group-B were females  $p < 0.49$ .

Comparison of mean period of hospital stay revealed that hospitalization period was less i.e.  $2.93 \pm$  days in group-A (treated by Karydakis technique) as compared to group-B i.e. 3.97 days (treated by Limberg flap procedure) ( $p < 0.001$ ) (table-I).

Work loss was  $13.13 \pm 1.15$  days in group-A and  $15.53 \pm 1.22$  days in group-B as shown in

Recurrence and infection is strongly associated with midline location of scar<sup>8,9</sup>.

There are two aims in management of pilonidal sinus disease. Firstly excision with effective healing and minimal recurrence rate. Second aim is low post surgical morbidity in minimizing hospitalization period and loss of workdays causing minimal inconvenience to the patient. The adopted method for treatment should aim at these goals<sup>10,11</sup>.

In surgery, many conditions have a superior operation usually not supported by strong evidence. In one such disease entity pilonidal sinus disease although out of various operative

**Table-I: Comparison of mean period of hospital stay.**

Group	Mean	Standard deviation
Group-A (Karydakis technique)	2.93	0.66
Group-B (Limberg Flap Procedure)	3.97	0.71
p value	=0.001	

**Table-II: Comparison of mean work loss (days).**

Group	Mean	Standard deviation
Group-A(Karydakis technique)	13.13	1.15
Group-B(Limberg Flap Procedure)	15.53	1.22
p value	=0.001	

table-II. Significant difference was noted between two groups is ( $p < 0.001$ ).

**DISCUSSION**

Pilonidal sinus disease is a common disorder in men which occurs in the 3<sup>rd</sup> decade and lowers the quality of life<sup>7</sup>. There are some predisposing factors for its occurrence. Some of these factors are hairy sacrococcygeal area, sitting on the firm ground for a long time, narrow and deep natal cleft and humid skin<sup>7</sup>. Infrequently, patients develop complex or recurrent pilonidal disease. Complex pilonidal disease characterized by chronic or recurrent abscesses and extensive branching sinus tracts. Recurrent pilonidal disease is usually caused when an unidentified sinus is left behind at initial excision; recurrent scar infection resulting in abscess formation; or variable natal cleft anatomy favoring friction, sweating and growth tendency of hair into scar.

choices no single one has been agreed upon but to make a choice there is sufficient evidence<sup>12</sup>.

Various studies regarding different techniques have been conducted culminating in varied outcomes and follow up. Through comparison of various studies it was concluded by Allen-Mersh in 1990 that in terms of healing time and rate of recurrence, off-midline closure is better as compared to excision and primary closure and wide excision with secondary healing<sup>13</sup>.

Similar satisfactory results with off midline closure as compared with midline closure were revealed in 2002 by Petersen et al. through evaluation of 74 publications, including 10,090 patients<sup>14</sup>.

McCallum et al in Aberdeen provided evidence base guidelines for surgical management through analyzing results of 18

randomized controlled trials involving 1573 patients over last decade<sup>15</sup>. The conclusion was minimal hospital stay with low recurrence rates with off – midline closure after excision of sinus. Current study revealed mean hospital stay of 2.93 ± 0.66 for patients treated by Karydakias technique which was similar to the time period reported in other studies<sup>16,17</sup>.

Bostanoglu et al. demonstrated that hospital stay was shorter (3.0 ± 1.5 days) in Karydakias technique as compared to Limberg flap procedure (4.3 ± 1.5 days). When the comparison was made between groups in terms of work loss, it was shorter in Karydakias technique (14.6 ± 6.1 days) as compared to Limberg flap procedure (17.7 ± 5.4 days)<sup>18</sup>. With limberg flap procedure hospital stay of patients is less as compared to that reported by Abu Galala et al and Katsoulis et al 4 and 6 days, respectively<sup>18</sup>. Similar results were also obtained in the current study.

**CONCLUSION**

Karydakias technique, in treatment of pilonidal sinus disease is better in terms of short duration of hospital stay and less work loss. Karydakias procedure should be the preferred method in treatment of sacrococcygeal pilonidal disease.

**CONFLICT OF INTEREST**

This study has no conflict of interest to declare by any author.

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