Section: General Surgery

Original Research Article

A COMPARATIVE STUDY ON THE EFFECTIVENESS OF BASCOM'S PROCEDURE OVER KARYDAKIS PROCEDURE IN THE MANAGEMENT OF PILONIDAL SINUS

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Abstract

Background: Pilonidal sinus (Latin Pilus-Hair, Nidus-Nest), apparently minor condition, may present to surgeon with major challenges like delayed wound healing, recurrence. The average amount of time lost from work as a result of Pilonidal sinus is 13 weeks. This study was carried out to determine the effectiveness of Bascom's procedure over Karydakis procedure in the management of Pilonidal sinus in terms of time taken for procedure, resuming work, duration of hospital stay, duration of wound healing, post-operative complications and recurrence. **Materials and Methods:** This is a prospective comparative study conducted in the Department of General Surgery of Rajarajeswari Medical College and Hospital, Bangalore comprising of a total of 30 patients with Pilonidal sinus who were assigned to Group A (undergoing Bascom's procedure) and Group B (undergoing Karydakis procedure) alternatively. They were followed through their immediate post-operative period and for up to 6months following surgery to assess the above mentioned parameters. **Result:** The study population of 30 patients showed a male preponderance (86.7%), with the most common presenting age group being 26-30y (26.7%). The occupation of most subjects involved prolonged sitting. The most common presenting complaint was a swelling in the sacrococcygeal region (83.3%), followed by discharge (66.7%) and pain (33.7%). 97% of the patients had a deep natal cleft. Mean time taken for procedure in Group A was 47±5min, which was significantly lower than in Group B 83±6min (P<0.01). Mean hospital stay following procedure in Group A was 3±2days, which was significantly lower than that of Group B 6±1day (P<0.01). **Conclusion:** From this study, we infer that Bascom's procedure for management of Pilonidal sinus is superior to Karydakis procedure in terms of shorter operative time, shorter duration of hospital stay and fewer post-operative complications.

INTRODUCTION

Pilonidal Disease includes Pilonidal Sinus, Pilonidal Cyst and Pilonidal Abscess. Though seen in other parts of the body, it mostly occurs in the sacro-coccygeal area, posing problems that include pain, acute abscess and chronic discharging sinus. It causes discomfort that may interfere with education or employment sometimes for prolonged periods.[1] The origin and the pathogenesis of pilonidal disease has always been a subject of controversy. It ranges from the age old controversial congenital theory to the latest more accepted hormonal and acquired theory.[2] The diagnosis of pilonidal disease is mostly clinical. And the management of the pilonidal sinus is difficult due to higher incidence of post-operative infection, defective healing and recurrence. Thus, though not life threatening, it can cause significant morbidity, considerable time lost from work-which can amount to months and high rates of recurrence.[3]

In spite of a large number of ingenious non – operative and operative methods of treatment, so far, no single method can be relied upon to completely cure the condition and prevent recurrence. Flap techniques have revolutionized the management of pilonidal disease. Good technique with less incidence of recurrence, less morbidity, less duration of hospital stay and good patient compatibility have made these procedures popular and acceptable with minimal cosmetic disfigurement.[4]

Though many techniques are practiced, the Bascom's procedure, Limberg's rhomboid flap and Karydakis

procedure are a few techniques that have proven to be efficient in the management of this condition.

Figure 1: Pilonidal Sinus

Figure 2: Pilonidal Abscess

MATERIALS AND METHODS

The cross It was a Prospective Comparative Study conducted for a period of 2 years, i.e., October 2018 to October 2020 at Rajarajeswari Medical College & Hospital, Bengaluru, Karnataka. It is a hospital-based study of 30 patients (with 15 patients in each group) who fulfilled the inclusion criteria. The material for the present study was collected from the patients who presented with discharge with/without swelling and with/without pain in the gluteal region to general surgery OPD in Rajarajeswari medical college and hospital.

Inclusion Criteria

Patients aged between 20 to 50yrs. Include both males and females.

Exclusion Criteria

Immuno-compromised patients:

HIV

On immuno-suppressants

On steroids

As this is a hospital-based study, sample size was calculated based on the annual average number of Pilonidal sinus patients seen in the outpatient department, i.e., approximately 42 patients. Simple random sampling was used.

Methodology

Detailed history taking, complete clinical examination of all patients presenting with Pilonidal sinus to Surgical OPD was done. Patients who consented to be included in the study underwent the following investigations. They were then alternately assigned to two groups: Group A (undergoing Bascom's procedure) and group B (undergoing Karydakis procedure) to undergo the proposed surgery for the case, noting the findings and the parameters to be analysed. Histopathology reports were noted. The operative time, time taken for resuming work , duration of hospital stay , time taken for healing ,postoperative course was noted & complications were attended to & treated accordingly. Patients were followed up for a further period of 6months. Final outcome was evaluated.

Conservative treatment- All patients were advised personal hygiene and local hair epilation. Patients presenting with pilonidal abscess were treated with incision and drainage initially as an out-patient procedure and appropriate antibiotics and rest given and then subjected for definitive procedure once the infection and edema subsided.

Surgical procedure- Patient was alternately assigned to Group A and Group B for surgical management- Group A – Bascoms procedure. Group B – Karydakis procedure.

Statistical Analysis: The collected data were analysed with IBM.SPSS statistics software 23.0 Version. To describe about the data descriptive statistics frequency analysis, percentage analysis was used for categorical variables and the mean & S.D were used for continuous variables. To find the significant difference between the bivariate samples in Independent groups the unpaired sample t-test was used. To find the significance in categorical data Chi-Square test was used similarly if the expected cell frequency is less than 5 in 2×2 tables then the Fisher's Exact was used. In all the above statistical tools the probability value .05 is considered as significant level.

Ethical Clearance: This study has received ethical clearance from the Institutional Ethics Committee.

RESULTS

As per [Table 1] age distribution were 16.7% is 21-25 years, 23.3% is 26-30 years, 26.7% is 31-35 years, 23.3% is 36-40 years, 10.0% is above 40 years. Gender distribution was 13.3% are Female, 86.7% are Male. Comparison between Age with Groups by Pearson's chi-squared test were $\chi^2=2.919$, $p=0.571>0.05$ which shows no statistical significant association between Age and Groups.

The above [Table 2] shows comparison between Gender with Groups by Pearson's chi- squared test were $\chi^2=0.000$, $p=1.000>0.05$ which shows no statistical significant association between Gender and Groups.

The above [Table 3] shows comparison between Swelling with Groups by Pearson's chi- squared test were $\chi^2=2.160$, $p=0.330>0.05$ which shows no statistical significant association between Swelling and Groups.

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Table 1: Comparison between Age with Groups

			Groups		Total	□ 2 - value	p-value
			Bascom's	Karydakis			
Age	21 – 25 years	Count	4	1	5	2.919	0.571 #
		%	26.7%	6.7%	16.7%		
	26 - 30 years	Count	3	4	7		
		%	20.0%	26.7%	23.3%		
	31 - 35 years	Count	3	5	8		
		%	20.0%	33.3%	26.7%		
	36 - 40 years	Count	3	4	7		
		%	20.0%	26.7%	23.3%		
	Above 40 years	Count	2	1	3		
		%	13.3%	6.7%	10.0%		
Total		Count	15	15	30		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

Table 2: Comparison between Gender with Groups

			Groups		Total	□ 2 - value	p-value
			Bascom's	Karydakis			
Gender	Female	Count	2	2	4	0.000	1.000 #
		%	13.3%	13.3%	13.3%		
	Male	Count	13	13	26		
		%	86.7%	86.7%	86.7%		
Total		Count	15	15	30		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

Table 3: Comparison between Swelling with Groups

			Groups		Total	□ 2 - value	p-value
			Bascom's	Karydakis			
Swelling	Absent	Count	1	4	5	2.160	0.330 #
		%	6.7%	26.7%	16.7%		
	Present	Count	14	11	25		
		%	93.3%	73.3%	83.3%		
Total		Count	15	15	30		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

Table 4: Comparison between Pain with Groups

			Groups		Total	□ 2 - value	p-value
			Bascom's	Karydakis			
Pain	Absent	Count	10	10	20	0.000	1.000 #
		%	66.7%	66.7%	66.7%		
	Present	Count	5	5	10		
		%	33.3%	33.3%	33.3%		
Total		Count	15	15	30		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

The above table shows comparison between Pain with Groups by Pearson's chi-squared test were □2=0.000, p=1.000>0.05 which shows no statistical significant association between Pain and Groups.

Table 5: Comparison between Discharge with Groups

			Groups		Total	□ 2 - value	p-value
			Bascom's	Karydakis			
Discharge	Absent	Count	6	4	10	0.600	0.439 #
		%	40.0%	26.7%	33.3%		
	Present	Count	9	11	20		
		%	60.0%	73.3%	66.7%		
Total		Count	15	15	30		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

The above table shows comparison between Discharge with Groups by Pearson's chi- squared test were □2=0.600, p=0.439>0.05 which shows no statistical significant association between Discharge and Groups.

Table 6: Comparison between Deep Natal Cleft with Groups

			Groups		Total	□ 2 - value	p-value
			Bascom's	Karydakis			
	Absent	Count	3	0	3		

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Deep Natal Cleft		%	20.0%	0.0%	10.0%	3.333	0.224 #
	Present	Count	12	15	27		
		%	80.0%	100.0%	90.0%		
Total		Count	15	15	30		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

The above table shows comparison between Deep Natal Cleft with Groups by Pearson's chi-squared test were χ^2=3.333, p=0.224>0.05 which shows no statistical significant association between Deep Natal Cleft and Groups.

Table 7: Comparison between Culture with Groups

			Groups		Total	χ^2 - value	p-value
			Bascom's	Karydakis			
Culture	Bacteroides fragilis	Count	0	1	1	4.133	0.659 #
		%	0.0%	6.7%	3.3%		
	Escherichia coli	Count	3	2	5		
		%	20.0%	13.3%	16.7%		
	Mixed	Count	2	2	4		
		%	13.3%	13.3%	13.3%		
	Staphylococcus aureus	Count	4	6	10		
		%	26.7%	40.0%	33.3%		
	Pseudomonas aeruginosa	Count	1	2	3		
		%	6.7%	13.3%	10.0%		
	Proteus mirabilis	Count	2	0	2		
		%	13.3%	0.0%	6.7%		
	No	Count	3	2	5		
		%	20.0%	13.3%	16.7%		
Total		Count	15	15	30		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

The above table shows comparison between Culture with Groups by Pearson's chi- squared test were χ^2=4.133, p=0.659>0.05 which shows no statistical significant association between Culture and Groups.

Table 8: Comparison between Wound dehiscence with Groups

			Groups		Total	χ^2 - value	p-value
			Bascom's	Karydakis			
Wound dehiscence	Absent	Count	15	13	28	2.143	0.483 #
		%	100.0%	86.7%	93.3%		
	Present	Count	0	2	2		
		%	0.0%	13.3%	6.7%		
Total		Count	15	15	30		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

The above table shows comparison between Wound dehiscence with Groups by Pearson's chi-squared test were χ^2=2.143, p=0.483>0.05 which shows no statistical significant association between Wound dehiscence and Groups.

Table 9: Comparison between Recurrence with Groups

			Groups		Total	χ^2 - value	p-value
			Bascom's	Karydakis			
Recurrence	Absent	Count	15	12	27	3.333	0.224 #
		%	100.0%	80.0%	90.0%		
	Present	Count	0	3	3		
		%	0.0%	20.0%	10.0%		
Total		Count	15	15	30		
		%	100.0%	100.0%	100.0%		
# No Statistical Significance at p > 0.05 level							

The above table shows comparison between Recurrence with Groups by Pearson's chi- squared test were χ^2=3.333, p=0.224>0.05 which shows no statistical significant association between Recurrence and Groups.

Table 10: Comparison of Time taken for procedure/mins with Groups by Unpaired t-test

		N	Mean	S.D	t-value	p-value
Time taken for procedure	Bascom's	15	47	5	18.720	0.0005 **
	Karydakis	15	83	6		
** Highly Significant at p < 0.01 level						

The above table shows comparison of Time taken for procedure/mins with Groups by Unpaired t-test were t-value=18.720, p=0.0005<0.01 which shows highly statistical significant difference between Time taken for procedure/mins and Groups.

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Table 11: Comparison of Hospital stay duration days with Groups by Unpaired t- test

		N	Mean	S.D	t-value	p-value
Duration of Hospital stay	Bascom's	15	3	2	5.527	0.0005**
	Karydakis	15	6	1		
** Highly Significant at p < 0.01 level						

The above table shows comparison of Hospital stay duration days with Groups by Unpaired t-test were t-value=5.527, p=0.0005<0.01 which shows highly statistical significant difference between Hospital stay duration days and Groups. The above table shows comparison of Days taken for Resumed work with Groups by Unpaired t-test were t-value=0.699, p=0.490>0.05 which shows no statistical significant difference between Days taken for Resumed work and Groups. The above table shows comparison of Days taken for healing with Groups by Unpaired t-test were t-value=0.543, p=0.591>0.05 which shows no statistical significant difference between Days taken for healing and Groups.

DISCUSSION

Pilonidal Sinus Disease has become a common disease affecting the young. It is under reported and yet it does significantly cause discomfort and morbidity to the patients that draw them to the surgeons- mostly when complications of the disease arise. Definitive treatment is best provided when the patient initially presents to the surgeon to prevent loss of time from work and distress to the patient.

The disease is more common in males for reasons like hirsutism, distribution of hair and occupation. The western literature also confirms that this disease is predominant in males. The disease doesn't occur in subjects beyond 50years for reasons that have already been explained. It is more commonly seen in the late teens and early twenties as the hormone levels are high in this age. Females tend to develop this disease at an earlier age than the male counterparts due to early onset of maturity. The mean age at presentation in our study is 32 years. But the western literature shows an earlier age at presentation of 24 years. This depicts better knowledge about the disease and early definitive treatment at an earlier stage.[5-7]

It is seen that the most common complaints that the patient may present with are pain, swelling and discharge. There may be persistent embarrassing discharge or vague dull aching pain that causes discomfort. Pilonidal sinus is a disease that has high rates of recurrence. And hence patients present with failure of previous treatment and recurrent trials of treatment in the past till proper definitive surgery has been advocated. Our study and the other studies that have been taken for comparison prove this.8,9 All the patients who presented had presence of sinus (single/multiple) in the natal cleft and they also had presence of a deep natal cleft. 83% of patients had local swelling and 66.7% of patients had active discharge seen coming out of the sinuses. About 33% of patients had complaints with abscess-pain, swelling, discharge, tachycardia, local raise of temperature and tenderness.

Diagnosis of pilonidal disease is mostly clinical; there are no specific investigations that are needed for the confirmation of its diagnosis. However, in patients presenting with discharge, the discharge was sent for culture and sensitivity and appropriate antibiotic treatment was instituted. The most common organisms that were isolated were the staphylococcus aureus, mixed growth was noted in 13.3% and 16% of patients had a negative culture. These findings are similar to the western study that has detailed evaluation organisms cultured in pilonidal disease. All the patients had undergone x ray lateral view of the lumbo-sacral region, and there was no radiological abnormality noted.

Patients were alternately and equally placed in both the groups. The patients who had undergone karydakis procedure had drains placed to prevent collection underneath the flap. The drains were removed when the collection in the drain was noted to be below 20ml and 2 patients did not require drain placement. The most common complication in bascoms procedure was wound infection in 6.66% of cases and was treated with IV antibiotics, regular dressings; wound was allowed to heal by secondary intention. In two cases that underwent Bascoms procedure with closure of lateral incision there were no complications and were not included in the study. In our study Wound dehiscence, collection was not observed, no recurrence in a follow up period of 6 months for Bascoms procedure. In the study conducted by Enriquez et al8 wound infection was seen in 17% and they encountered a recurrence of 8% over a follow up period of 5 years. In karydakis procedure collection in 26.7%, wound dehiscence in 13.3%, infection in 20%, and recurrence in 20% was observed while in study conducted by Petersen S et al,[9] collection in 24.8%, wound dehiscence in 11.2%, infection in 16%, no recurrence was noted. Rate of complications and recurrence was lower in group who underwent Bascoms procedure with no statistical significance with karydakis procedure.

In our study Operative time taken for bascoms procedure was 47 +/- 5 min and for karydakis procedure was 83+/- 6 min with a t value of 18.720 and a p value of 0.005 which was statistically significant. Operative time taken for karydakis procedure in other studies was 60 min. In our study the duration of hospital stay for patients who underwent Bascoms procedure was 3 +/- 2 days which was comparable to study by Sevinc B et al,[10] and for patients who underwent karydakis procedure was 6 +/- 1 day was comparable to study conducted by Sevinc B et al,[10] and Arslan K et al,[11] being 3 days and 4.08 days respectively, with a t value of

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5.527 and p value of 0.0005 was statistically significant.

In our study time taken to resume work for patients who underwent Bascoms procedure 11 +/- 2 days was comparable to study done by Sevinc B et al,[10] being 20 days and for patients who underwent Karydakis procedure was 10 +/- 3 days was comparable to Arslan K et al,[11] and Guner et al,[12] being 14 days and 11.08 days respectively, with a t value of 0.699 and p value of 0.490 was not statistically significant.

In our study time taken for healing for the patients who underwent Bascoms procedure was 11 +/- 2 days which was comparable to study done by Sevinc B et al,[10] being 13 days and for patients who underwent karydakis procedure time taken to healing was 11 +/- 4 days which was comparable to study conducted by Guner et al,[12] being 24 days and 14.5 days respectively, with a t value of 0.543 and p value of 0.591 was not statistically significant.

In our study there was no recurrence noted in patients who underwent Bascoms procedure during a follow up period of 6 months while in study conducted by Arslan K et al,[11] a recurrence rate of 8% was noted. In patients who underwent karydakis procedure our study noted a recurrence rate of 20% while in study conducted by Guner et al,[12] they noted no recurrence.

CONCLUSION

From the results of our study, we infer that pilonidal sinus is a disease of the natal cleft affecting young adults with a male preponderance and occupation involving prolonged sitting. It is more common in patients with high body mass index and deep natal cleft. Anaerobic infection is more common in the sinus. Bascom's procedure has shown to be superior to Karydakis procedure in the management of pilonidal sinus in our study in terms of shorter operative time, shorter duration of hospital stay and fewer complications. However, longer duration of follow-up is necessary to determine long-term complications and recurrences.

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