Original Article

DOI: 10.17354/ijss/2016/81

Routine Internal Sphincterotomy with Hemorrhoidectomy: A Prospective Study

S Harish[1], R Raxith Sringeri[1], G Ajay[2]

[1]Associate Professor, Department of Surgery, JSS University, Mysore, Karnataka, India, [2]Post-graduate, Department of General Surgery, JSS University, Mysore, Karnataka, India

Abstract

Aim: The aim of this study is to compare open hemorrhoidectomy with/without internal sphincterotomy with regard to post-operative pain, post-operative complications and wound healing.

Materials and Methods: Patients admitted to JSS Hospital with second-degree hemorrhoids refractory to medical. A total of 100 patients were randomly divided into two groups: Group A - Control Group (50 patients): Patients undergoing open hemorrhoidectomy. Group B - Study group (50 patients): Patients undergoing open hemorrhoidectomy with internal sphincterotomy.

Results: On post-operative day-1 (POD-1), the group which underwent sphincterotomy had lesser complications with regard to pain ($P < 0.0001$), bleeding ($P = 0.1$), constipation ($P = 0.02$), urinary retention ($P = 0.02$). On POD-2, pain ($P < 0.001$), bleeding ($P = 0.05$), and constipation (0.2) were significantly lesser in with sphincterotomy group. At 2 weeks post-operative follow-up, the rate of complete wound healing was 100% in with sphincterotomy group, whereas in without sphincterotomy group it was 84%. The findings are statistically significant as indicated by the *P* value.

Conclusion: Addition of internal sphincterotomy to open hemorrhoidectomy is an effective method to reduce post open hemorrhoidectomy pain, complications as well as reduce the duration of complete wound healing without any significant morbidity.

Key words: Hemorrhoids, Internal sphincterotomy, Open hemorrhoidectomy, Post-hemorrhoidectomy pain

INTRODUCTION

Hemorrhoids are common clinical conditions. About half of the population has hemorrhoids by the age of 50 years. It is estimated that 58% of people aged over 40 years have the disease in the USA.[1-4] Almost one-third of these patients present to surgeons for treatment. Hemorrhoids can occur at any age, and they affect both men and women.

Exact incidence in developing countries is unknown, but the disease is being more frequently encountered, perhaps due to westernized lifestyle. Hemorrhoids have plagued humans since they attained the erect posture.[5-8]

Access this article online

www.ijss-sn.com

Month of Submission : 12-2015
Month of Peer Review : 01-2016
Month of Acceptance : 01-2016
Month of Publishing : 02-2016

The word "hemorrhoid" is derived from Greek word hemorrhoids, meaning flowing of blood (haem = blood, rhoos = flowing). The word "piles" comes from Latin word pila meaning a pill or ball. To be accurate, we should call the disease as piles when the patient complains of a swelling and "hemorrhoids" when he or she complains of bleeding.[2,9-11] The most common method of treatment of hemorrhoids is by Hemorrhoidectomy which involves excision of pile mass, either by open hemorrhoidectomy (Milligan-Morgan) or closed hemorrhoidectomy (Ferguson) method.

MATERIALS AND METHODS

- Method of study: It is a prospective study of patients admitted in JSS Hospital Mysore
- Duration of study: November 2013-October 2015
- Sample size: 100 cases, (50 cases of Milligan-Morgan hemorrhoidectomy without sphincetrotomy and 50 cases of open hemorrhoidectomy with sphincterotomy).
- The source of the data: All patients with Grade II, III and Grade IV hemorrhoids coming to the General

Corresponding Author: Dr. R Raxith Sringeri, Department of Surgery, JSS Hospital, Mysore, Karnataka, India. E-mail: raxith25@gmail.com

Surgery Department of JSSH, Mysore will be included for the study.

A. Inclusion criteria
1. Age 25-50 years
2. Diagnosed to have second-degree hemorrhoids refractory to medical treatment
3. Third-degree hemorrhoids
4. Fourth-degree hemorrhoids.

B. Exclusion criteria
1. First- and second-degree hemorrhoids, managed by medical line of the treatment
2. Patients with medical co-morbidites - Diabetes mellitus, hypertension, ischemic heart disease, asthma
3. H/O anal fissures/anal fistula/perianal abscess
4. Previous hemorrhoidal surgeries
5. Fecal incontinence
6. Previously treated with sclerotherapy and other modalities for hemorrhoids.

Methodology

A randomized case control trial with prospective data collection of 50 patients. Randomization process will be carried out by odd and even numbers. Patients admitted will undergo standard screening for anaesthetic fitness and will be operated under spinal block.

Patients will have to sign the informed consent before participating in the study. Standard antibiotic prophylaxis and bowel preparation will be carried out.

The severity of post-operative pain was assessed according to frequency of administration of analgesic, needed to control the pain for a patient which followed an "on the patient's demand" protocol. Pain will be categorized as:
- Mild (Grade 1) - if analgesics were administered 0-2/48 hours to control pain
- Moderate (Grade 2) - if analgesics were administered 3-4/48 h, and
- Severe (Grade 3) - if analgesics were administered > 4/48 h.

All the patients will be given diclofenac as an analgesic intramuscularly. Details of the time and number of injections used will be recorded against each patient.

Visual Analogue Scale (VAS)

VAS is a single item vertical scale of 100 mm for pain intensity, categorized as:
- No pain (0-4 mm)
- Mild pain (5-44 mm)
- Moderate pain (45-74 mm)
- Severe pain (75-100 mm).

The patients will be followed up at pouch of douglas 1, 7 and at 2 weeks, 4 weeks, once a month for 3 months, under the following criteria:
1. Pain
2. Post-operative urinary retention
3. Constipation
4. Rectal bleeding
5. Wound hematoma
6. Submucosal abscess
7. Stenosis and
8. Wound healing.

Statistical methods used are:
1. Descriptive statistics
2. Chi-square test
3. Contingency co-efficient tests
4. "*t*" test independent

RESULTS

Age Distribution

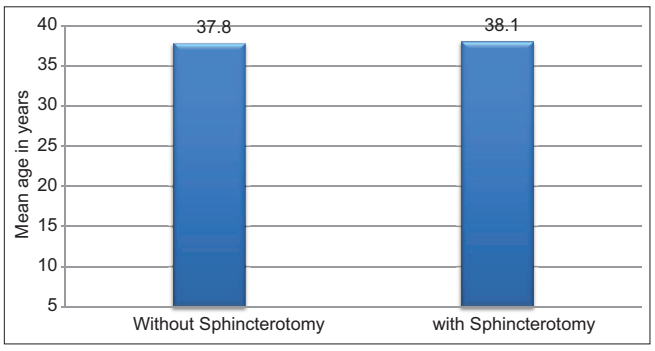
In my study, patients were of the mean age of 37.8 years in without sphincterotomy group, and 38.1 in with sphincterotomy group (Table 1 and Graph 1).

Sex Distribution

A number of females in the study group were 22 in without sphincterotomy group and 21 in with sphincterotomy group, i.e. 44% and 42%, respectively. Number of males in the study group were 28 in without sphincterotomy group and 29 in with sphincterotomy group, i.e. 56% and 58%, respectively (Table 2 and Graph 2).

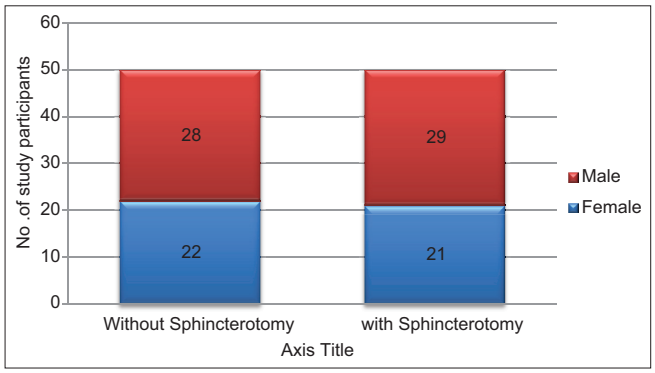
Distribution of grade of hemorrhoids without sphincterotomy group. Grade 2: 8%, Grade 3: 72%, Grade 4: 20%. With sphincterotomy group Grade 2: 10%, Grade 3: 70%, and Grade 4: 20% (Table 3).

Assessment of pain: Table 4 and Graph 3: Post-operative - day-1.

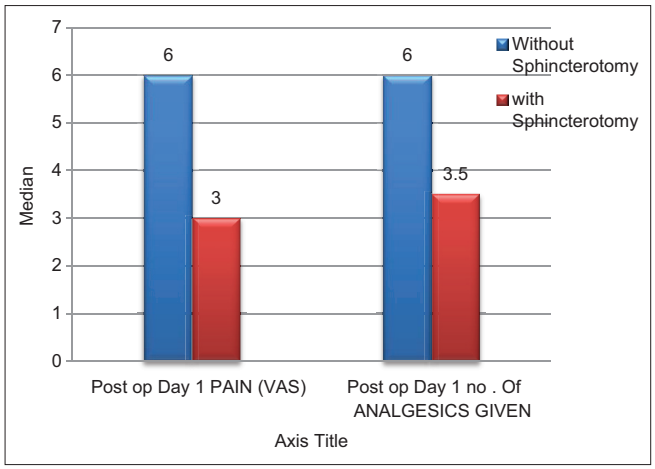


Graph 1: Age distribution

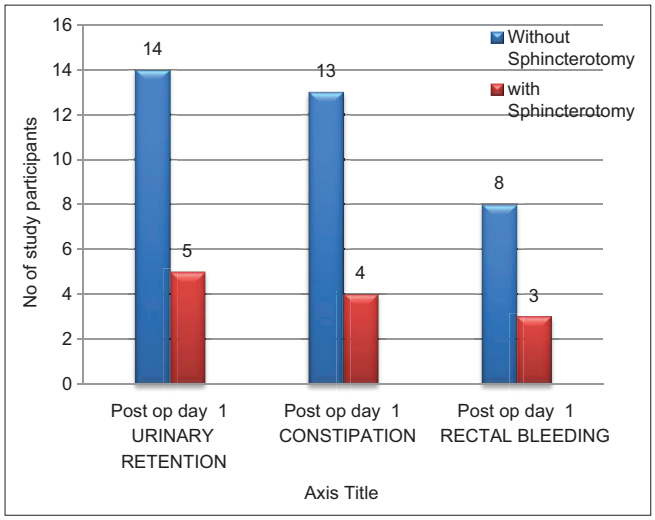
Assessment of pain - post-operative day-1 (POD-1) pain was assessed using two variables, i.e. VAS and numbered of analgesics given on day-1, patients who underwent hmerrhoidectomy without sphincterotomy had more pain ($P < 0.001$) when compared to patients who underwent sphincterotomy (Table 4 and Graph 3).



Graph 2: Sex distribution



Graph 3: Assessment of pain post-operative - day-1



Graph 4: Post-operative – day – 1: Assessment of complication

Table 5 and Graph 4: Post-operative - day - 1: Assessment of complication.

Assessment of complications: On POD-1, patients who did not undergo sphincterotomy had more

Table 1: Age distribution

	Group					
	Without sphincterotomy			With sphincterotomy		
	Mean	SD	Median	Mean	SD	Median
Age	37.8	7.7	38.5	38.1	8.3	39.5

P=0.8, Independent *t* test, SD: Standard deviation

Table 2: Sex distribution

Sex	Group (*n* (%))	
	Without sphincterotomy	With sphincterotomy
Female	22 (44.0)	21 (42.0)
Male	28 (56.0)	29 (58.0)

P=0.8, Chi-square test

Table 3: Distribution of grade of hemorrhoids

Grade of hemorrhoids	Group (*n* (%))	
	Without sphincterotomy	With sphincterotomy
Grade 2	4 (8.0)	5 (10.0)
Grade 3	36 (72.0)	35 (70.0)
Grade 4	10 (20.0)	10 (20.0)

P=0.9, Chi-square test

Table 4: Assessment of pain: Post-operative - day-1

Pain	Group						*P*
	Without sphincterotomy			With sphincterotomy			
	Mean	SD	Median	Mean	SD	Median	
POD-1 pain (VAS)	6.24	2.11	6.00	3.94	1.88	3.00	<0.0001
POD-1 (analgesics given)	6.24	1.90	6.00	3.72	1.16	3.50	<0.0001

VAS: Visual analogue scale, POD: Post-operative day-1, SD: Standard deviation

Table 5: Post-operative - day - 1: Assessment of complication

Complications	Group (*n* (%))		*P*
	Without sphincterotomy	With sphincterotomy	
POD-1 - Urinary retention			
No	36 (72.0)	45 (90.0)	0.02
Yes	14 (28.0)	5 (10.0)	
POD-1 - Constipation			
No	37 (74.0)	46 (92.0)	0.02
Yes	13 (26.0)	4 (8.0)	
POD-1 - Rectal bleeding			
No	42 (84.0)	47 (94.0)	0.1
Yes	8 (16.0)	3 (6.0)	

POD: Post-operative day

complication is regard to urinary retention ($P = 0.02$), constipation ($P = 0.02$), and bleeding ($P = 0.1$) (Table 5 and Graph 4).

Assessment of Pain

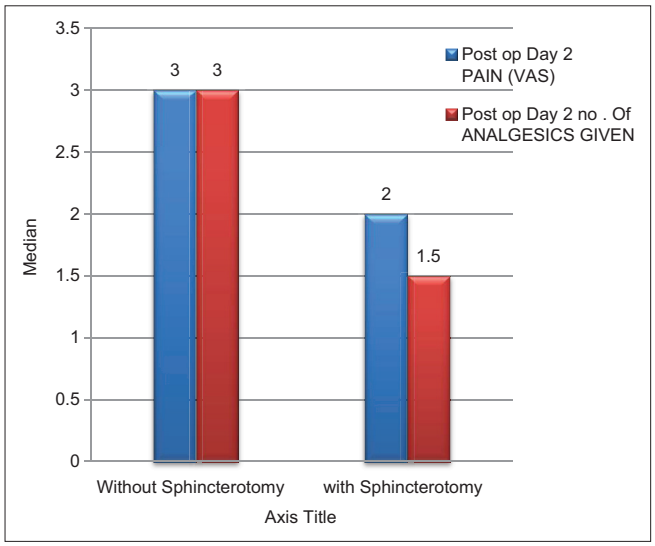
On POD-2, pain in without sphincterotomy group ($P < 0.001$) for VAS and number of Analgesics given was significantly more than with sphincterotomy group (Table 6 and Graph 5).

Assessment of Complications

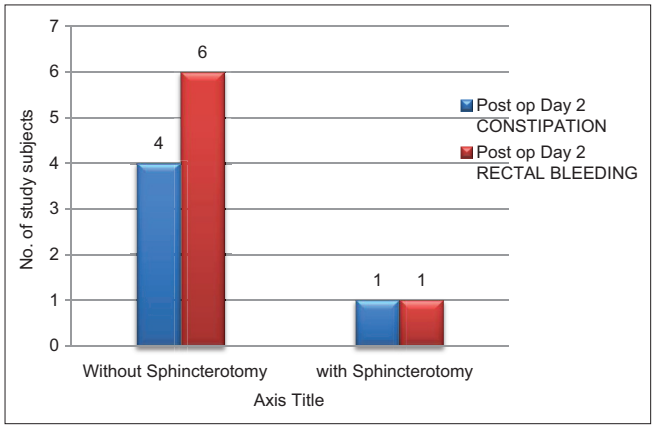
On POD-2, constipation ($P = 0.2$), rectal bleeding ($P = 0.05$) were significantly more in without sphincterotomy group when compared to with sphincterotomy group (Table 7 and Graph 6).

In our study, as mentioned, assessment of pain was carried out with two variables,

1. VAS
2. Number of analgesics administered.



Graph 5: Post-operative - day - 2 assessment of pain



Graph 6: Post-operative -day -2 assessment of complications

On comparison, using both variables in patients of both groups, i.e. with sphincterotomy and without sphincterotomy in open hememorrhoidectomy, it was found that pain was significantly lesser in with sphincterotomy group ($P < 0.01$) on POD 1, 2, 7, 1 week and 2 weeks.

The patients undergoing open hemorrhoidectomy with sphincterotomy had early relief of pain when compared to patients undergoing open hemorrhoidectomy without sphincterotomy (Table 8 and Graph 7).

In our study, on comparing both the groups, i.e., with and without sphincterotomy post open hamemorrhoidetomy, it was found that post-operative rectal bleeding was significantly more in without sphincterotomy group (Table 9 and Graph 8).

Table 6: Post-operative - day - 2 assessment of pain

Pain	Group						P
	Without sphincterotomy			With sphincterotomy			
	Mean	SD	Median	Mean	SD	Median	
POD-2 - Pain (VAS)	3.66	1.30	3.00	1.96	1.23	2.00	<0.001
POD-2 - Pain (analgesics given)	2.68	0.68	3.00	1.58	0.73	1.50	<0.001

VAS: Visual analogue scale, POD: Post-operative day, SD: Standard deviation

Table 7: Post-operative - day - 2: Assessment of complications

Complications	Group (*n* (%))		*P*
	Without sphincterotomy	With sphincterotomy	
POD-2 - Constipation			
No	46 (92.0)	49 (98.0)	0.2
Yes	4 (8.0)	1 (2.0)	
POD-2 - Rectal bleeding			
No	44 (88.0)	49 (98.0)	0.05
Yes	6 (12.0)	1 (2.0)	

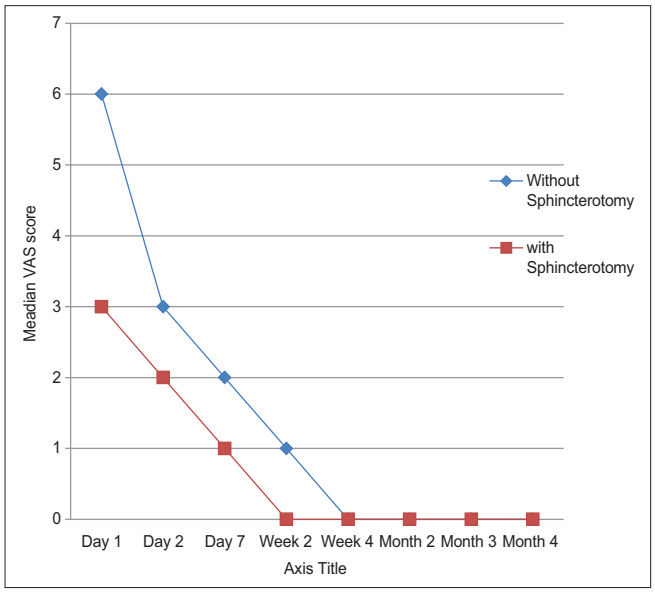
POD: Post-operative day

Table 8: Assessment of post-operative pain

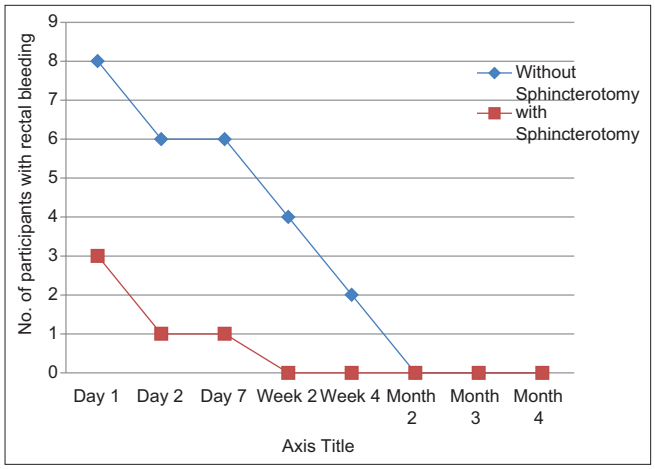
VAS	Group						*P*
	Without sphincterotomy			With sphincterotomy			
	Mean	SD	Median	Mean	SD	Median	
POD-1 - Pain	6.24	2.11	6.00	3.94	1.88	3.00	<0.001
POD-2 - Pain	3.66	1.30	3.00	1.96	1.23	2.00	<0.001
POD-7 - Pain	2.0	0.9	2.0	0.7	0.6	1.0	<0.001
2 weeks - Pain	1.18	0.87	1.00	0.18	0.44	0.00	<0.001
4 weeks - Pain	0.20	0.49	0.00	0.00	0.00	0.00	NS
2 months - Pain	0.10	0.36	0.00	0.00	0.00	0.00	NS
3 months - Pain	0.06	0.24	0.00	0.00	0.00	0.00	NS
4 months - Pain	0.00	0.00	0.00	0.00	0.00	0.00	NS

VAS: Visual analogue scale, POD: Post-operative day, SD: Standard deviation

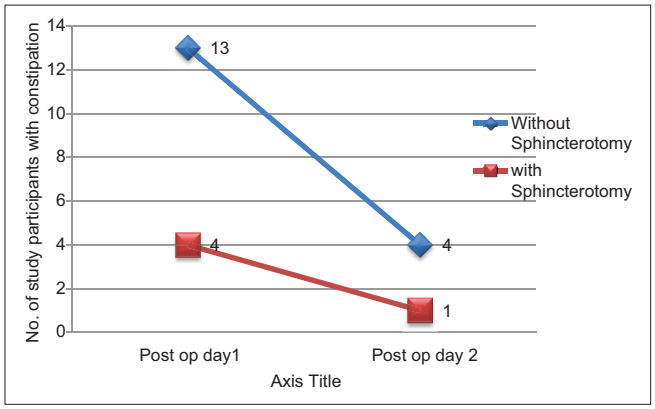
POD-1 ($P = 0.1$)
POD-2 ($P = 0.05$)
POD-7 ($P = 0.05$)
Post-operative 2 weeks (0.02)
Post-operative 4 weeks (0.2)



Graph 7: Assessment of post-operative pain



Graph 8: Assessment of post-operative rectal bleeding



Graph 9: Assessment of post-operative constipation

In our study, postoperatively, patients had constipation only in the early post-operative period, i.e. POD-1 and day 2.

On comparing both the groups, it was found that patients who underwent hemorrhoidectomy with sphincterotomy had significantly lesser episode of post-operative

Table 9: Assessment of post-operative rectal bleeding

Rectal bleeding	Group (*n* (%))		*P*
	Without sphincterotomy	With sphincterotomy	
POD-1			
No	42 (84.0)	47 (94.0)	0.1
Yes	8 (16.0)	3 (6.0)	
POD-2			
No	44 (88.0)	49 (98.0)	0.05
Yes	6 (12.0)	1 (2.0)	
POD-7			
No	44 (88.0)	49 (98.0)	0.05
Yes	6 (12.0)	1 (2.0)	
2 weeks			
No	46 (92.0)	50 (100.0)	0.02
Yes	4 (8.0)	0 (0)	
4 weeks			
No	48 (96.0)	50 (100.0)	0.2
Yes	2 (4.0)	0 (0)	
2 months			
No	50 (100.0)	50 (100.0)	NS
3 months			
No	50 (100.0)	50 (100.0)	NS
4 months			
No	50 (100.0)	50 (100.0)	NS

POD: Post-operative day

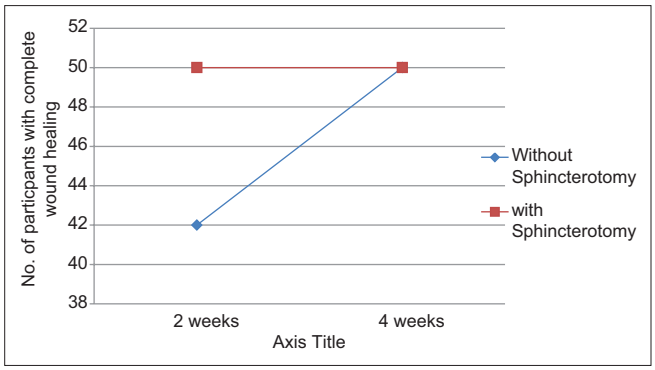
Table 10: Assessment of post-operative constipation

Constipation	Group (*n* (%))		*P*
	Without sphincterotomy	With sphincterotomy	
POD- 1- Constipation			
No	37 (74.0)	46 (92.0)	0.02
Yes	13 (26.0)	4 (8.0)	
POD-2 - Constipation			
No	46 (92.0)	49 (98.0)	0.2
Yes	4 (8.0)	1 (2.0)	

POD: Post-operative day

Table 11: Assessment of complete wound healing post-operative

Complete wound healing	Group (*n* (%))		*P*
	Without sphincterotomy	With sphincterotomy	
2 weeks			
No	8 (16.0)	0 (0)	0.003
Yes	42 (84.0)	50 (100.0)	
4 weeks			
No	42 (84.0)	50 (100.0)	0.003
Yes	8 (16.0)	0 (0)	



Graph 10: Assessment of complete wound healing post-operative

constipation (Table 10 and Graph 9). POD-1 ($P = 0.02$) and POD-2 ($P = 0.2$).

In our study, on comparing open hemorrhoidectomy with/without sphincterotomy for assessment of complete wound healing, it was found that the time taken for complete wound healing was significantly more ($P = 0.003$).

It also showed that in patients who underwent sphincterotomy, complete wound healing occurred by 2 weeks (Table 11 and Graph 10).

DISCUSSION

Age and sex distribution

	Without sphincterotomy		With sphincterotomy	
	Present study	Das *et al.*[12]	Present study	Das *et al.*[12]
Mean age	38.5	36	39.5	37.5
Male/female ratio	22/28	21/29	17/8	14/11

The age and sex distribution among the study group were compared with a study done by Das *et al.*[12] In my study, the mean age at presentation was about 2 years more than that of the compared study. The male: female ratio was almost similar in my study, whereas in the compared study males were more than females.

Post-operative pain

	Without sphincterotomy		With sphincterotomy	
	Present study	Das *et al.*[12]	Present study	Das *et al.*[12]
Number of patients	50	25	50	25
Mean pain score	2.0	2.32	1.23	1.60

In my study, the total number of patients in control and study group were more when compared to the study carried out by Das *et al.*[12] The mean pain score in my study was comparatively lesser in the with sphincterotomy group. Furthermore, in my study, post-operative pain was statistically significant for the intial post-operative period in with sphincterotomy group, but in the later follow-up period, it was not significant. Therefore, hemorrhoidectomy with sphincterotomy post-operative pain was significantly lesser when compared to hemorrhoidectomy without sphincterotomy.

Complications

	Without sphincterotomy		With sphincterotomy	
	Present study	Das *et al.*[12]	Present study	Das *et al.*[12]
Urinary retention	14	8	5	1
Constipation	17	8	5	3
Rectal bleeding	10	Nil	5	Nil
Incontinence	Nil	2	Nil	Nil
Anal stenosis	Nil	Nil	Nil	1

In my study, on comparing the complications in the post-operative period, in both groups, it was found that patients undergoing hemorrhoidectomy without sphincterotomy had significantly more complications when compared to with sphincterotomy group.

Furthermore, in my study, no patients experienced any of the late complications such as incontinence or anal stenosis, whereas in the study conducted by Das *et al.*,[12] 2 patients in without sphincterotomy group had flatus incontinence and 1 patient in with sphincterotomy group had anal stenosis.

Complete wound healing (%)

	Without sphincterotomy		With sphincterotomy	
	Present study	Das *et al.*[12]	Present study	Das *et al.*[12]
Post-operative 2 weeks	84	80	100	100
Post-operative 4 weeks	16	20	-	-

Healing rates following with/without sphincterotomy after hemorrhoidectomy were compared between my study and the study conducted by Das *et al.*[12] In the follow-up period post-operative, it was found that Complete wound healing occurred by 2 weeks in with sphincterotomy group of both the studies. Thus, on comparison, healing rate was higher and early in hemorrhoidectomy with sphincterotomy group in my study as well as the study conducted by Das *et al.*[12]

CONCLUSION

Hemorrhoids is one of the oldest diseases known to mankind causing significant discomfort to the patient. The most common clinical presentations being bleeding and

mass per rectum. The most common surgical procedure for the treatment of hemorrhoids is Milligan Morgan or open hemorrhoidectomy.

Post-operative pain and delayed wound healing is of concern, post-open hemorrhoidectomy, and hence the study was done to compare the above procedure with the addition of internal sphincterotomy, with respect to post-operative pain, post-operative complications and wound healing.

The results of the study conclude that post-operative pain, post-operative complications were lesser in open hemorrhoidectomy with internal sphincterotomy, with early wound healing.

REFERENCES

1. Cohen Z. Symposium on outpatient anorectal procedures. Alternatives to surgical hemorrhoidectomy. Can J Surg 1985;28:230-1.
2. Keighley MR, Williams NS. Surgery of Anus, Rectum and Colon. 2nd ed., Vol. 1. Philadelphia, PA: Saunders Publications; 2008. p. 351-422.
3. Ellesmore S, Windsor AC. Surgical history of haemorrhoids. In: Charles MV, editor. Surgical Treatment of Haemorrhoids. London: Springer; 2002. p. 1-4.
4. Shampo MA. Brief history of colorectal surgery. J Pelvic Surg 1998;4:259-67.
5. Notaras MJ. The treatment ofanal fissure by lateral subcutneous internal sphincterotomy – a technique and results. Br J Surg 1971;58:96-100.
6. Williams PL, Warwick R. Gray's Anatomy. 36th ed., Ch. 8. Edinburgh: Churchill Livingstone; 2008. p. 1358-61.
7. Decker G, du Plessis DJ. Lee Mc Gregor's-Synopsis of Surgical Anatomy. 12th ed. Bristol: John Wright and Sons; 1986. p. 61-8.
8. Sinnatam CS. Last's Anatomy-Regional and Applied. 10th ed. Edinburgh: Churchill Livingstone; 2011. p. 305-8.
9. Thomson WH. The nature of haemorrhoids. Br J Surg 1975;62:542-52.
10. Thomson WH. Haemorrhoids. In: Morris PJ, Malt RA, editors. Oxford Textbook of Surgery. Ch. 20.1. New York: Oxford University Press; 1994. p. 1125-36.
11. Gibbons CP, Bannister JJ, Read NW. Role of constipation and anal hypertonia in the pathogenesis of haemorrhoids. Br J Surg 1988;75:656-60.
12. Gass OC, Adams J. Hemorrhoids; etiology and pathology. Am J Surg 1950;79:40-3.

How to cite this article: Harish S, Sringeri RR, Ajay G. Routine Internal Sphincterotomy with Hemorrhoidectomy: A Prospective Study. Int J Sci Stud 2016;3 (11):182-188.
Source of Support: Nil, **Conflict of Interest:** None declared.