SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Effectiveness of Combining Internal Sphincterotomy in Patients Undergoing Open Hemorrhoidectomy

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DOI: 10.36347/sasjs.2021.v07i06.010 | **Received:** 02.04.2021 | **Accepted:** 10.05.2021 | **Published:** 18.06.2021

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Abstract **Original Research Article**

Hemorrhoids are one of the most common presentations of the anal canal [1]. Various treatment modalities have been described over the years. However, still hemorrhoidectomy offers the best chances of permanent cure of symptomatic hemorrhoids.[1, 2] The main complication of hemorrhoidectomy is the pain in the first postoperative week which is very uncomfortable to the patient [3]. The main cause of unpleasant post-hemorrhoidectomy pain is due to the spasm of the internal sphincter that is exposed after open hemorrhoidectomy[4, 5, 6]. Internal Sphincterotomy reduces post hemorrhoidectomy pain by abolishing the hypertonicity (spasm/pressure) of the internal anal sphincter and subsequently reduces the related post hemorrhoidectomy complications[7, 8, 9] The main aim of this study was to compare the postoperative pain and other postoperative complications in two groups of patients treated with open hemorrhoidectomy and open hemorrhoidectomy with internal sphincterotomy. In this Randomised-Control-Trial from October 2018 to April 2020, Group-A underwent open-hemorrhoidectomy and Group-B underwent open-hemorrhoidectomy and internal-sphincterotomy. They were analysed for Visual-Analog-Scale (VAS) for postoperative pain at 12 hours, 24 hours, 48 hours, Day 7, Wexner's Score for fecal incontinence, duration of postoperative hospitalisation, return to work. Mean postoperative VAS of Group-A at 12 hours, 24 hours, 48 hours, Day-7 was 7.30, 5.03, 2.93, 1.47 respectively. For Group-B, postoperative VAS at 12 hours, 24hours, 48 hours, Day-7 was 6.10, 3.83, 2.00, 1.00 respectively. Mean duration of postoperative hospitalisation in Group-A was 3.6 days and Group-B was 2.6 days. Mean Wexner's Score for fecal incontinence in Group-A was 0.00 and Group-B was 0.20. Mean duration of return to work in Group-A was 17.43 days and Group-B was 10.23 days. Results were analysed and were found to be statistically significant. Patients of Group-B (open hemorrhoidectomy with internal sphincterotomy) had reduced postoperative pain, reduced postoperative hospitalisation with early discharge, early return to work compared to Group-A (open hemorrhoidectomy).

Keywords: Hemorrhoids, Open hemorrhoidectomy, Internal Sphincterotomy, Complications, Postoperative pain.

INTRODUCTION

Hemorrhoids are one of the most common presentations of the anal canal [1]. Various treatment modalities have been described over the years. However, still hemorrhoidectomy offers the best chances of permanent cure of symptomatic haemorrhoids [1, 2]. The main complication of hemorrhoidectomy is the pain in the first postoperative week which is very uncomfortable to the patient [3]. The main cause of unpleasant post-hemorrhoidectomy pain is due to the spasm of the internal sphincter that is exposed after open hemorrhoidectomy [4, 5, 6]. Over the time, the addition of Internal Sphincterotomy to hemorrhoidectomy was studied and proved for a better postoperative period in terms of less postoperative pain and less complications [1, 7]. Internal Sphincterotomy reduces post hemorrhoidectomy pain by abolishing the hypertonicity (spasm/pressure) of the internal anal sphincter and subsequently reduces the related post hemorrhoidectomy complications [7, 8, 9]. Various clinical trials have been conducted comparing hemorrhoidectomy alone and hemorrhoidectomy combined with internal sphincterotomy. Meta-analysis conducted has shown that internal sphincterotomy has been an advantage for patients undergoing open hemorrhoidectomy [6]. The main aim of this study was to compare the postoperative pain, urinary retention, fecal incontinence, duration of return to work, postoperative anal stenosis in two groups of patients treated with open hemorrhoidectomy and open hemorrhoidectomy with internal sphincterotomy.

MATERIALS AND METHODS

Objectives of the study were to compare the effectiveness of internal sphincterotomy in reducing these after open hemorrhoidectomy:

1. Post-operative pain
2. Urinary retention
3. Post-operative hospitalisation
4. Duration of return to work
5. Fecal Incontinence
6. Anal stenosis

Ethical Clearance was obtained from Instituitional Ethics Committee.

Type of study: Randomised Control Trial.

Source of data: Patients with Grade 2/3/4 hemorrhoids undergoing open hemorrhoidectomy.

Place of Study: Department of General Surgery, Kempegowda Institute of Medical Sciences, Bengaluru

Study Period: October 2018 to April 2020.

Inclusion Criteria:

- Age > 18 years.
- Patient willing to give informed consent.
- Diagnosis of Grade 2,3 or 4 hemorrhoids.

Exclusion Criteria:

- Age<18 years.
- Patient not willing to give informed consent.
- Recurrent hemorrhoids.
- Associated fistula or fissure.
- Malignancy.
- Associated cirrhosis and portal hypertension.

Study Protocol:

Patients meeting the inclusion criteria admitted for open hemorrhoidectomy are enrolled for study. Patients are randomised into two groups:

Group A: In this group, patients undergo open hemorrhoidectomy only

Group B: In this group, patients undergo Open hemorrhoidectomy and lateral internal sphincterotomy.

Sample size calculated was 60. Among 60 patients, randomised numbers were allotted and study subjects were allocated to 2 groups, Group A undergo Open Hemorrhoidectomy and Group B undergo Open Hemorrhoidectomy with Lateral Internal Sphincterotomy. Physician fitness and pre-anaesthetic fitness was obtained for all the cases. The operative procedures, its complications and costs explained to the patient and their attenders and a pre-informed written consent was taken from all the patients and their attendants.

History was taken from all study subjects. General Physical Examination was done. Pre-operative workup with investigations were done. Per Rectal examination and Proctoscopy was done for all patients. Grade and positions of hemorrhoids were noted. Any associated condition and fissure or fistula were noted.

Postoperatively, following details were noted: Pain was assessed in the postoperative period using Visual Analog Score, with range of 0 to 10 at the following intervals: 12 hours, 24 hours, 48 hours, Day 7. Details were noted if the study subject had urinary retention postoperatively. Duration of hospital stay after surgery was noted. Postoperative incontinence was noted in terms of Wexner's Incontinence Score. Anal stenosis was looked for during follow-up at 6 weeks. Duration of return to work was noted. These parameters were compared between Group A and Group B and statistically analysed.

Patients with fecal incontinence were followed up regularly till 6 months. They were advised dietary changes and perineal exercises.

Statistical Analysis

Mean, Standard Deviation (SD), Standard Error of Means, Levene's Test for equality of variances, t-Test for equality of means, ANOVA, Chisquare test were used for statistical analysis. p value<0.05 was considered statistically significant.

RESULTS AND DISCUSSION

Table-1: Age distribution in two groups of patients studied

Age in years	Group A	Group B	Total
21-30	5	2	7
31-40	6	9	15
41-50	12	8	20
51-60	5	8	13
61-70	2	2	4
71-80	0	1	1
TOTAL	30	30	60

Mean (years)	**45.32**
Median	**45.50**
Standard Deviation	11.598
Minimum	**21**
Maximum	**75**

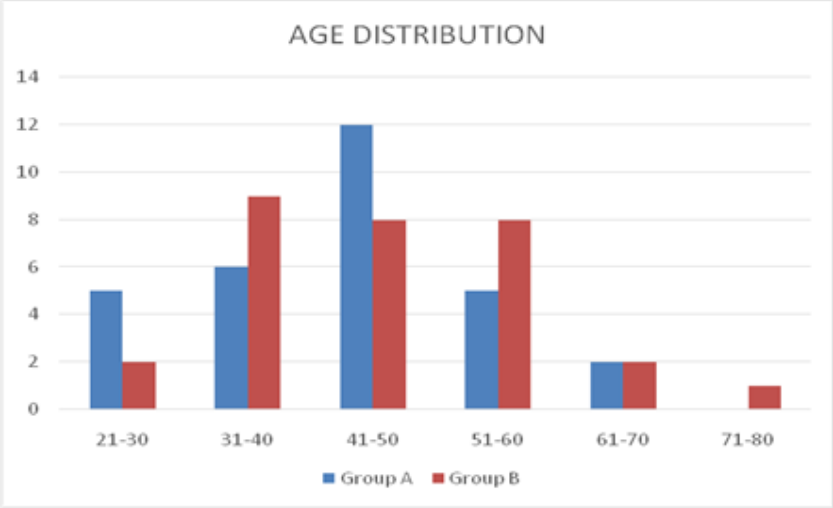

Fig-1: Age distribution in two groups of patients studied

Most of patients were in the age group of 31-60 years. Age of patients ranged between 21 and 75 years. Age distribution was comparable between 2 groups.

Table-2: Gender distribution in two groups of patients studied

GENDER	Group A	Group B	Total
MALE	24	21	45
FEMALE	6	9	15
TOTAL	30	30	60

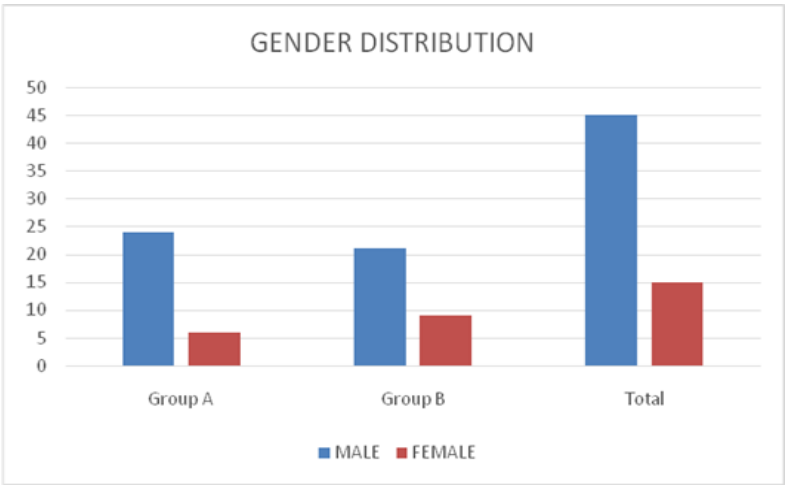

Fig- 2: Gender distribution in two groups of patients studied

45 out of 60 patients were males and 15 out of 60 were females with Male: Female ratio of 3:1.

Table-3: Post-operative Pain among groups through Visual Analog Scale

Pain at 48 hours (VAS)	Group A	2.93	0.691	0.126	2.68	3.19	2	4
	Group B	2.00	0.455	0.083	1.83	2.17	1	3
	Total	2.47	0.747	0.096	2.27	2.66	1	4
Pain at Day 7 (VAS)	Group A	1.47	0.507	0.093	0.48	2.46	1	3
	Group B	1.00	0.000	0.000	1.00	1.00	1	1
	Total	1.23	0.325	0.024	0.593	1.87	1	3

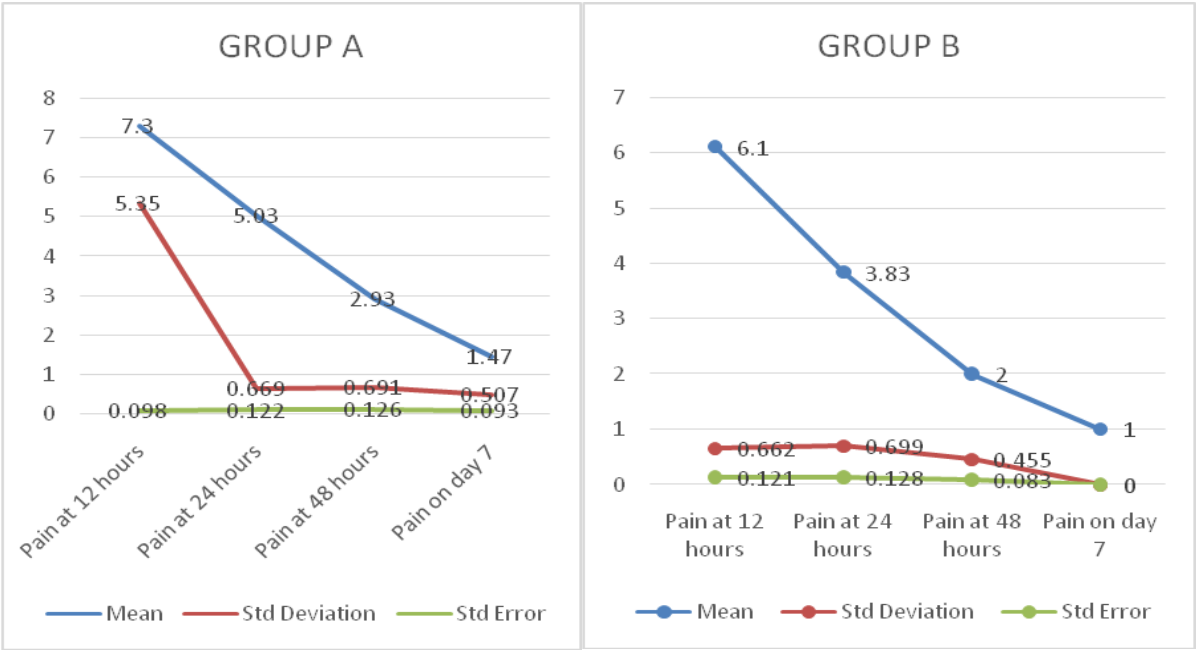

Fig- 3: Post-operative pain among groups

Table-4: Post-operative pain analysis - ANOVA

		Sum of Squares	df	Mean Square	F	p value
Post op pain VAS 12 hours	Between Groups	21.600	1	21.600	59.657	0.000
	Within Groups	21.000	58	0.362		
	Total	42.600	59			
Post op pain VAS 24 hours	Between Groups	21.600	1	21.600	46.172	0.000
	Within Groups	27.133	58	0.468		
	Total	48.733	59			
Post op pain VAS 48 hours	Between Groups	13.067	1	13.067	38.148	0.000
	Within Groups	19.867	58	0.343		
	Total	32.933	59			

Post-operative pain was less in patients undergoing open hemorrhoidectomy with internal sphincterotomy at 12 hours, 24 hours, 48 hours and Day 7 compared to patients undergoing only open hemorrhoidectomy. It was statistically significant.

Table-5: Post-operative urinary retention

	Urinary Retention		Percentage
	No	No	
GROUP A	24	24	20.00
GROUP B	29	29	3.33
Total	53	53	11.67

Patients who underwent internal sphincterotomy with open hemorrhoidectomy had less incidence of urinary retention compared to patients who underwent only open hemorrhoidectomy, but was not statistically significant.

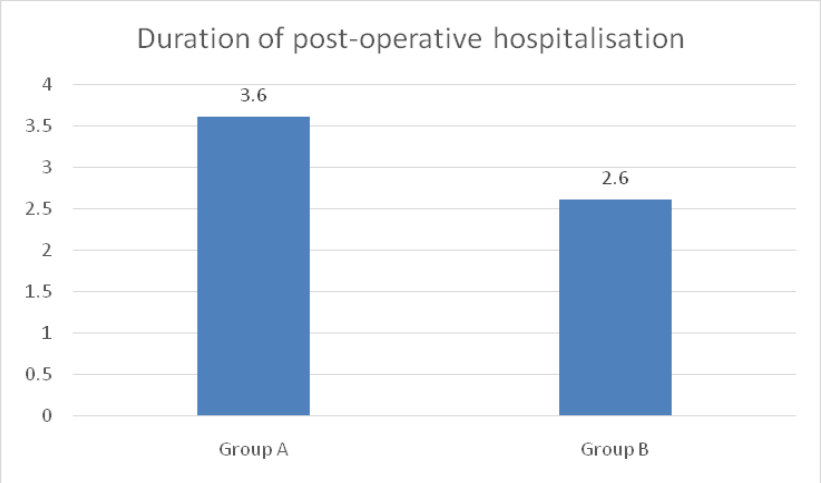

Fig-4: Duration of postoperative hospitalisation

Patients who underwent internal sphincterotomy with open hemorrhoidectomy had reduced duration of post-operative hospital stay (Mean: 2.6 days) compared to patients who underwent only open hemorrhoidectomy (Mean: 3.6 days). It was statistically significant.

Table-6: Incontinence Score at Day 7 and Duration of return to work

	GROUP	Mean	Standard Deviation	Standard Error
Incontinence Score (0-20)	Group A	0.00	0.000	0.000
	Group B	0.20	0.407	0.074
Duration of return to work in days	Group A	17.43	6.388	1.166
	Group B	10.23	2.431	0.444

Mean incontinence score in patients who underwent open hemorrhoidectomy with internal sphincterotomy was 0.2 compared to patients who underwent only open hemorrhoidectomy.

Duration of return to work in patients who underwent open hemorrhoidectomy with internal sphincterotomy (Mean: 10.23 days) was less compared to patients who underwent only open hemorrhoidectomy (Mean:17.43 days). It was statistically significant.

Several authors have reported the usefulness of combining internal sphincterotomy in patients undergoing open hemorrhoidectomy. Various studies including randomised control trials (RCTs), meta-analysis have been done comparing hemorrhoidectomy alone and hemorrhoidectomy combined with internal sphincterotomy. These studies aimed to study the effectiveness of combining internal sphincterotomy with open hemorrhoidectomy in reducing post-operative complications including pain, urinary retention, fecal incontinence, anal stenosis. Our results were comparable to other studies conducted by Diana G et al [10], Wei Guo Wang et al [11], Lu et al [12].

CONCLUSION

Open hemorrhoidectomy remains the gold standard technique for treatment of hemorrhoids. However, post-operative complications like pain, urinary retention following open hemorrhoidectomy are attributed to hypertonicity of exposed internal anal sphincter following surgery. But, incidence of fecal incontinence increases following internal sphincterotomy. Various studies have been conducted comparing only hemorrhoidectomy and hemorrhoidectomy with internal sphincterotomy.

Our study was a Randomised Control Trial (RCT) involving 30 patients undergoing only open hemorrhoidectomy and 30 patients undergoing open hemorrhoidectomy with internal sphincterotomy. There was significant decrease in post-operative pain, post-operative hospitalisation, duration of return to work among patients where internal sphincterotomy was combined with open hemorrhoidectomy compared to patients undergoing only open hemorrhoidectomy. Patients undergoing hemorrhoidectomy with internal sphincterotomy had reduced incidence of urinary retention but was not statistically significant. Incidence of fecal incontinence as measured by Wexner's incontinence score was higher among patients undergoing hemorrhoidectomy with internal sphincterotomy. However, follow-up of all those patients for 6 months showed incontinence was temporary and resolved spontaneously. Anal stenosis was not found in any patient in this study.

Our study results were compared with other studies including Randomised Control Trials, Meta-analysis which showed similar results.

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