

Original Research Article

Stapler hemorrhoidectomy versus Milligan Morgan hemorrhoidectomy in hemorrhoids in terms of post-operative pain and hospital stay - A prospective randomized control trial

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	International Archives of Integrated Medicine, Vol. 3, Issue 12, December, 2016. Copy right © 2016, IAIM, All Rights Reserved. Available online at http://iaimjournal.com/ ISSN: 2394-0026 (P) ISSN: 2394-0034 (O)	
	Received on: 28-11-2016 Source of support: Nil	Accepted on: 05-12-2016 Conflict of interest: None declared.
How to cite this article: K Tirumala Prasad, R V Apparao. Stapler hemorrhoidectomy versus Milligan Morgan hemorrhoidectomy in hemorrhoids in terms of post-operative pain and hospital stay - A prospective randomized control trial. IAIM, 2016; 3(12): 59-67.		

Abstract

Background: Haemorrhoidectomy remains the treatment of choice for symptomatic grade-III and IV hemorrhoids. Milligan and Morgan's haemorrhoidectomy is the most widely used procedure in the surgical management of hemorrhoids.

Aim: This study was done to evaluate and analyze statistically whether stapler haemorrhoidectomy is better than Milligan Morgan haemorrhoidectomy in terms of Post operative pain, Duration of Hospital stay.

Materials and methods: Prospective analytical study of 124 patients of haemorrhoids Grade II to Grade IV admitted, all adults aged 18 to 75 years with grade II to grade IV haemorrhoids admitted with ASA GRADE < III were included in our study. Two groups were constituted a stapled haemorrhoidectomy group and a Milligan Morgan group operated using standard open haemorrhoidectomy. Pain was assessed and recorded at 0, 15, 30, 45, 60 minutes after the patient attains a score of 4/4 on Bromage scale. Pain was assessed using visual analogue scale (VAS).

Results: It was observed that at 0 minutes out of 62 patients in Milligan Morgan group 47 patients had moderate pain, 15 had mild pain. (mean VAS score was 4.242), at 15 minutes out of 62 patients in Milligan Morgan group 38 patients had moderate pain, 24 had mild pain (mean VAS score was 3.82). At 30 minutes out of 62 patients in Milligan Morgan group 25 patients had moderate pain 37 had mild pain (mean VAS score was 3.50). At 45 minutes out of 62 patients in Milligan Morgan group 19 patients had moderate pain 43 had mild pain (mean VAS score 3.342). At 60 minutes out of 62 patients in Milligan Morgan group 14 patients had moderate pain 48 had mild pain.(mean VAS score 3.016)/ In the stapler group the VAS scale at the same intervals were 1.712, 1.06, 0.966, 0.647, and 0.407 respectively. At all the intervals the P value was <0.005. Thus establishing the fact that stapler haemorrhoidectomy is less painful procedure than Milligan Morgan hemorrhoidectomy. The mean duration of hospital stay in the Milligan Morgan group was 2.532 days and stapler haemorrhoidectomy was 1.136 days with a P value <0.005.

Conclusion: The circular stapled procedure for haemorrhoids is superior in terms of postoperative pain, discomfort, anaesthesia time and return to normal activity.

Key words

Hemorrhoids, Stapler hemorrhoidectomy, Milligan Morgan hemorrhoidectomy, Post-operative pain, VAS scale.

Introduction

Hemorrhoids have been described since the beginning of medical history. The first known documentation is from around 2250 BC in the Code of King Hammurabi in Babylon where symptoms of hemorrhoids are described. The first topical treatment is described in an Egyptian papyrus 1700 BC and the first surgical excision is described by Hippocrates in the Hippocratic treatises 460 BC. The word hemorrhoid is derived from ancient Greek (haema = blood and rhoos =flowing). It is said that the French emperor, Napoleon Bonaparte suffered from hemorrhoids. At the battle of Waterloo Napoleon had difficulties riding his horse and spent most of the time in bed. When he walked around it was noted that he walked with difficulties with the legs spread apart. Historians mean that this “crise hemorrhoidale” impaired his battlefield conduct and made him loose the battle [1]. There are several hypotheses on the etiology and there are several theories about the pathogenesis of haemorrhoids. At least 50% patients over the age of 50 years have some degree of discomforts from them [2, 3]. Hemorrhoidectomy remains the treatment of choice for symptomatic grade-III and IV hemorrhoids [4]. Milligan and Morgan’s hemorrhoidectomy is the most widely used

procedure in the surgical management of hemorrhoids [5]. The past decade has provided new treatment for hemorrhoids such as the stapled hemorrhoidectomy (stapled anopexy), which is now resulting in large numbers of scientific publications. Other new treatment options such as hemorrhoid arterial ligation (HAL) and the transanal hemorrhoidal dearterialisation (THD) are gaining in popularity, but the scientific evidence is not yet produced. Each procedure has its own advantages and disadvantages which create the controversy of one optimum option for the disease treatment. In our institution hemorrhoidectomy is a commonly treated condition. The purpose of this study is to compare Milligan Morgan hemorrhoidectomy versus Stapler hemorrhoidectomy in grade II to grade IV hemorrhoids in terms of post-operative pain and hospital stay in my institution and to arrive at a conclusion of which procedure is better in the terms of post-operative pain and hospital stay.

Materials and methods

Tertiary care hospital recognized for DNB course by National Board of Examinations. It is a prospective analytical study of 124 patients of hemorrhoids grade II to grade IV admitted to

Tirumala multi-specialty hospitals, Vizianagaram. Data was obtained from 124 patients admitted to the surgical ward in the hospital where the study is done. All patients qualified after satisfying inclusion criteria from August 2013 to May 2015 and followed for a period of 6 months.

Inclusion criteria

- All adults aged 18 to 75 years with symptomatic grade II to grade IV hemorrhoids.
- Patients with ASA GRADE < III.

Exclusion criteria

- Patients who refused for surgery.
- Patients with age <18 and >75.
- Patients with ASA > grade III.
- Patients with cirrhosis of liver with portal hypertension.
- Patients with history of any perianal surgery/ pelvic irradiation.
- Patients with inter current anal pathology like fistula in ano, fissure in ano and abscesses.
- Patients with inflammatory conditions involving ano rectum.
- Patients with carcinoma ano rectum.
- Patients with mental disorders and language difficulties.

All adults aged 18 to 75 years with grade II to grade IV hemorrhoids admitted to the Department of General Surgery, Tirumala Multi specialty Hospitals with ASA GRADE < III were included in our study. Inclusion started in August 2013 and ended on May 2015. Diagnosis of hemorrhoids was made by clinical history and examination. The data of the eligible patients was collected in the prepared proforma. The patients were randomized to undergo either stapled hemorrhoidectomy or the Milligan Morgan hemorrhoidectomy. Two groups were constituted: a stapled hemorrhoidectomy group operated using PPH 03 Kit; and a Milligan Morgan group operated using standard open hemorrhoidectomy. 3 patients in the stapler hemorrhoidectomy group were excluded after

randomization as they refused for surgery. All patients underwent routine pre-operative evaluation and investigations in the form of routine hemogram, blood sugar random, renal function tests, chest x ray pa view, ECG, HIV, HBsAg, urine routine examination, BT, CT. All patients underwent Digital Rectal Examination (DRE), Proctoscopy. Flexible sigmoidoscopy and colonoscopy in select patients were performed wherever required.

Preoperatively

Enema on the day of admission, only liquid diet up to 3 hours before surgery, second enema 3 hours before posting for surgery, perianal skin preparation and painting with antiseptic solution was done. The type of anesthesia used is spinal anesthesia with 0.5% bupivacaine with no additives.

Post operatively

Pain was assessed and recorded at 0, 15, 30, 45, 60 minutes after the patient attains a score of 4/4 on Bromage scale. All patients were given Inj. Diclofenac sodium 75 mg intra muscular stat as soon as the patient is shifted from the operation theatre. Pain was assessed using visual analogue scale (VAS). Pain was classified as no pain (0 to 1) mild (1 to 4), moderate (5 to 7) and severe (8 to 10).

Anal packs were removed after 6 hours of surgery. Patient was allowed liquids diet 4 hours after surgery. Patient was followed till discharge and his complaints were attended accordingly and the duration of stay in days, in the hospital, was recorded.

Results

The average age of MMH Procedure patients was 39.9 which is similar to SH Procedure with mean age of 41.6%. From the above insignificant p-value of student t-test it was concluding that the age Procedures taken into the sample is not statistically significant at 5% level of significance. The graphical representation is shown below as a box plot with circled plus

indicates the mean age, the middle line of the box specifies the median value, the upper end and lower end of the line designates the patient with upper age Procedure and lower age Procedure, the upper end and lower end of the box reveals the 75th and 25th percentile respectively (**Table – 1**).

From the above table and its corresponding chi-square value reveals that Procedure and gender are independent to each other i.e., the sample consider in the study is similar with regard to gender of the patients for both the procedures (**Table – 2**).

There were a total of 121 cases of which 62 underwent Milligan Morgan hemorrhoidectomy and 59 underwent Stapler hemorrhoidectomy. Out of the total 121 patients 15 belong to grade II out of which 14 underwent Milligan m organ

hemorrhoidectomy and 1 underwent stapler (**Table – 3**).

67 patients belonged grade III out of which 30 underwent Milligan Morgan hemorrhoidectomy and 37 underwent stapler hemorrhoidectomy. 39 patients belong to grade IV out of which 18 underwent Milligan Morgan and 21 underwent stapler hemorrhoidectomy.

The above table reveals that pain assessment in VAS scale after 4/4 Bromage scale at intervals in minutes between MMH and SH, the average MMH score is significantly greater than SH average scores in all the time points at 5% level of significances as per the significant p-value of student t-test mentioned above. The same is mentioned below as an error bar diagram with bar represents the mean and the line indicates the variation from mean i.e., standard deviation (**Table – 4**).

Table – 1: Comparison of demographic data procedure vs. age.

Procedure vs Age	n	Mean	SD	T value	P value	Decision
Milligan Morgan hemorrhoidectomy	62	39.9	10.6	-0.89	0.375	Not significant
Stapler hemorrhoidectomy	59	41.6	10.7			

Table - 2: Procedure vs. gender.

Procedure Vs Gender	Male	Female	Total
Milligan Morgan Hemorrhoidectomy	46(74.19%)	16(25.81%)	62(100%)
Stapler Hemorrhoidectomy	44(74.58%)	15(25.42 %)	59(100%)
Total	90(74.38%)	31(25.62 %)	121 (100%)

Table - 3: Grades of haemorrhoids vs. procedure.

Procedure	Grade			Total
	2.00	3.00	4.00	
MMH	14 (22.6%)	30 (48.4%)	18 (29.0%)	62 (100%)
SH	1 (1.7%)	37 (62.7%)	21 (35.6%)	59 (100%)
Total	15 (12.4%)	67 (55.4%)	39 (32.2%)	121 (100%)

Pain when assessed using vas scale, after attaining Bro mage scale of 4/4, at 0 minutes. Pain was classified into mild (VAS 0-4) moderate (V AS 5-7)and severe(8-1 0) it was

observed that out of 62 patients in Milligan Morgan group 47 patients had moderate pain 15 had mild pain whereas all the 59 patients in

stapler haemorrhoidectomy group were in mild group.

Pain when assessed using vas scale, after attaining Bromage scale of 4/4, at 15 minutes. Pain was classified into mild (VAS 0-4) moderate (VAS 5-7) and severe (8-10) it was observed that out of 62 patients in Milligan Morgan group 38 patients had moderate pain 24 had mild pain whereas all the 59 patients in stapler haemorrhoidectomy group were in mild group. Pain when assessed using vas scale, after attaining Bromage scale of 4/4, at 30 minutes. Pain was classified into mild (VAS 0-4) moderate (VAS 5-7) and severe (8-10) it was observed that out of 62 patients in Milligan Morgan group 25 patients had moderate pain 37 had mild pain whereas all the 59 patients in

stapler haemorrhoidectomy group were in mild group. Pain when assessed using vas scale, after attaining Bromage scale of 4/4, at 45 minutes. Pain was classified into mild (VAS 0-4) moderate (VAS 5-7) and severe (8-10) it was observed that out of 62 patients in Milligan Morgan group 19 patients had moderate pain. 43 had mild pain whereas all the 59 patients in stapler haemorrhoidectomy group were in mild group. Pain when assessed using vas scale, after attaining Bromage scale of 4/4, at 60 minutes. Pain was classified into mild (VAS 0-4) moderate (VAS 5-7) and severe (8-10) it was observed that out of 62 patients in Milligan Morgan group 14 patients had moderate pain. 48 had mild pain whereas all the 59 patients in stapler haemorrhoidectomy group were in mild group (Table – 5).

Table - 4: Pain vs. procedure.

Minutes	Procedure	Mean	SD	r-value	p-value	Decision
0	MMH/SH	4.242/1.712	0.953/0.527	18.19	0.000	Significant
15	MMH/SH	3.823/1.068	0.859/0.254	24.16	0.000	Significant
30	MMH/SH	3.5/0.966	0.844/0.183	23.07	0.000	Significant
45	MMH/SH	3.242/0.627	0.761/0.488	22.60	0.000	Significant
60	MMH/SH	3.016/0.407	0.665/0.495	24.55	0.000	Significant

Since the p-value of the student t-test specifies that there was a significant difference in the hospital stay days between the two Procedures at 5% level of significance. Further, the average number of hospital stay days for MMH Procedure was significantly greater than SH Procedure patients which shows that SH procedure is better procedure when compare with MMH. The graphical representation is shown below as an individual value plot with blue colored circled plus indicates the average value and red dots indicates the number of days that each patient staying in the Hospital (Table – 6).

Discussion

Hemorrhoids are a common condition of anorectal region. Surgical excision of hemorrhoids is effective in treating hemorrhoidal prolapse but is still much feared by the patients,

because of ensuing postoperative pain, which is usually worst during the passage of stool owing to direct stimulus of the wound and reactionary sphincter spasm. Technical modifications have been adapted to decrease postoperative pain which includes lateral internal sphincterotomy, closed hemorrhoidectomy, diathermy hemorrhoidectomy and use of anal sphincter relaxants like glycerol trinitrate (GTN) ointment or post-operative use of metronidazole. Although, all of these techniques have had advocates, none has resulted in sufficient decrease in postoperative pain to gain universal acceptance. A new approach to the treatment of hemorrhoids is transverse mucosal prolapsectomy using a circular stapling device at the anorectal junction at a distance between 3 and 4 cm above the dentate line. This technique involves interruption of terminal branches of the

superior hemorrhoidal arteries and resection of part of the prolapsed mucosa. This lifts the mucosa up in the anal canal, thus correcting the prolapse and reducing the arterial inflow. The

procedure involves circumferential excision of tissue in the area above the dentate line without causing a perianal wound thus it is less painful, with a quicker recovery.

Table - 5: Pain assessment in VAS scale (0, 15, 30, 45, 60 minutes).

Procedure	Pain assessment in VAS scale (0 minutes)		Total
	Mild	Moderate	
MMH/SH	15 (24.2%)	47 (75.8%)	62 (100%)
MMH/SH	59 (100%)	0 (0%)	59 (100%)
Total	74 (61.2%)	47 (38.8%)	121 (100%)
Pain assessment in VAS scale (15 minutes)			
MMH/SH	24 (38.7%)	38 (61.3%)	62 (100%)
MMH/SH	59 (100%)	0 (0%)	59 (100%)
Total	83 (68.6%)	38 (31.4%)	121 (100%)
Pain assessment in VAS scale (30 minutes)			
MMH/SH	37 (59.7%)	25 (40%)	62 (100%)
MMH/SH	59 (100%)	0 (0%)	59 (100%)
Total	96 (79.3%)	25 (20%)	121 (100%)
Pain assessment in VAS scale (45 minutes)			
MMH/SH	43 (69.4%)	19 (30.6%)	62 (100%)
MMH/SH	59 (100%)	0 (0%)	59 (100%)
Total	102 (84.3%)	19 (15.7%)	121 (100%)
Pain assessment in VAS scale (60 minutes)			
MMH/SH	48 (77.4%)	14 (22.6%)	62 (100%)
MMH/SH	59 (100%)	0 (0%)	59 (100%)
Total	107 (88.4%)	14 (11.6%)	121 (100%)

Table - 6: Procedure vs. hospital days.

Procedure vs Hospital stay days	n	Mean	SD	T value	P value	Decision
Milligan Morgan hemorrhoidectomy	62	2.532	0.503	17.88	0.000	Significant
Stapler hemorrhoidectomy	59	1.136	0.345			

Procedure for prolapse and hemorrhoids (PPH) does not treat any external components of the disease or other perineal conditions like anal fissures, hypertrophied anal papillae and acute thrombosis, so that the patient must be informed by the surgeon that these conditions will not be treated by this procedure alone. Most operations for haemorrhoidectomy are being carried out on a day-case basis with reduced bed occupancy, and hence lessen the economic burden on an already stretched health service. In addition, early return to work may also be possible with

potential benefit to the individual and society. However, a major drawback is the cost of stapling device with its accessories. This was a comparative study procedure with 62 patients in Milligan Morgan hemorrhoidectomy and 59 patients in Stapler hemorrhoidectomy undergoing respective procedures conducted at Tirumala hospitals Vizianagaram. The study was done to compare Milligan Morgan and stapler hemorrhoidectomy in grade II to grade IV symptomatic hemorrhoids in terms of post-operative pain and hospital stay.

Age distribution

The average age of MMH Procedure patients is 39.9 which is similar to SH Procedure with mean age of 41.6%. The P- value being 0.375 which implies that age has not influenced statistically with the outcome of the study. The mean age of incidence was comparable to the study by Johanson, et al. [6].

Gender distribution

There were 90 males in the study sample of which 46 underwent Milligan Morgan hemorrhoidectomy and 44 underwent stapler hemorrhoidectomy. There were 31 females in the study sample of which 16 underwent Milligan Morgan hemorrhoidectomy and 15 underwent stapler hemorrhoidectomy. There is a male preponderance in the incidence but it was demonstrated from the statistical analysis that procedure and gender are independent to each other i.e., the sample considered in the study is similar with regard to gender of the patients for both the procedures.

Grades of Hemorrhoids

In this study there were a total of 121 cases of which 62 underwent Milligan Morgan hemorrhoidectomy and 59 underwent Stapler hemorrhoidectomy. Out of the total 121 patients 15 belong to grade II out of which 14 underwent Milligan Morgan hemorrhoidectomy and 1 underwent stapler. 67 patients belong grade III out of which 30 underwent Milligan Morgan hemorrhoidectomy and 37 underwent stapler hemorrhoidectomy. 39 patients belong to grade IV out of which 18 underwent Milligan Morgan and 21 underwent stapler hemorrhoidectomy. Patients showed willingness for surgery whenever there was a component of prolapse and bleeding. As evident by the observations that most of the patient belonged to either grade III or grade IV Hemorrhoids.

Postoperative Pain

Most surgeons would agree that the main challenge faced after hemorrhoidectomy is the post-operative pain. Stapler Hemorrhoidectomy offers a significantly less painful alternative as it

excises a circumferential portion of the lower rectal and upper anal canal mucosa and submucosa and performs a re-anastomosis with a circular stapling device. As a result, the prolapsed anal cushions are retracted into their normal anatomic positions within the anal canal. In addition, the terminal branches of the inferior hemorrhoidal artery are disrupted, and blood flow into the cushions is thereby decreased. The strongest argument in favor of this operation is that it leaves the richly innervated anal canal tissue and perianal skin intact, thus reducing the pain usually associated with hemorrhoidectomy. In the PPH Multicenter Study Group trial [7] it was demonstrated that stapled hemorrhoidopexy offers the benefits of less post-operative pain, less analgesic requirements, and less pain at bowel movement, while providing similar control of symptoms and less frequent need for additional anorectal treatments at 1-year follow-up. In the present study presence of postoperative pain was comparable with studies performed worldwide, which ranged from absent to mild and moderate degrees. The mean VAS score in the Milligan Morgan group at 0 minutes after attaining 4/4 on Bromage scale was 4.242 +/- 0.953 and that of the stapler group at the same time interval was 1.712 +/- 0.527. The mean VAS score in the Milligan Morgan group at 60 minutes after attaining 4/4 on Bromage scale was 3.016 +/- 0.665, whereas in the stapler hemorrhoidectomy group was 0.407 +/- 0.495. The P value <0.005 at all the intervals of measurement thus it is statistically evident that stapler hemorrhoidectomy is less painful than Milligan Morgan hemorrhoidectomy.

Hospital stay days

After the introduction of the stapler hemorrhoidectomy, hemorrhoidectomy is being carried out on a day-case basis with reduced bed occupancy, and hence, lessen the economic burden on an already stretched health service. In our study the mean duration of hospital days in Milligan Morgan group was 2.532 days and that of Stapler haemorrhoidectomy was 1.136 days with a significant P value <0.005. This is consistent with most of the studies. Salman

Yousuf Guraya, et al. [8], conducted a prospective study and it was performed on all patients with grade III and grade IV hemorrhoids, presenting to the surgical clinics of Ohud and Meeqat Hospitals Almadinah Almunawwarah Saudi Arabia. The results of SH were evaluated by a questionnaire focusing on the relief of symptoms, severity of post operative pain, and complications of SH. The results were thirty patients (21 males and 9 females); with a mean age of 39.6 years were recruited in this study. Twenty six (86%) patients had grade III and 4 (14%) presented with grade IV hemorrhoids. Perianal prolapse was the most frequent presentation reported in 23 (76%). Mean operating time was 21.7 minutes (range; 17-36 minutes) whereas mean hospital stay was 1.9 days. Post-operative pain was tolerable (non-persistent) in 28 (93%) cases whereas 2 (7%) experienced mild pain requiring additional analgesia. Urinary retention was the most common complication found in 5 (16%) patients. All patients were cured of the haemorrhoids [9, 10]. This study concluded that SH is a safe, rapid, and convenient surgical remedy for grade III and grade IV hemorrhoids with low rate of complications, minimal post-operative pain, and early discharge from the hospital.

Conclusion

This study supports the evidence that stapled hemorrhoidectomy is a safe and effective technique for the operative management of hemorrhoidal disease that can be performed on an outpatient basis. Offering obvious clinical advantages, including less postoperative pain, reduced hospital stay, and quicker return to normal function. In view of the above advantages stapler hemorrhoidectomy may be considered as a better alternative to conventional hemorrhoidectomy for second to fourth degree hemorrhoids. However, Milligan Morgan and Stapler Hemorrhoidectomy had very similar costs and QALYs, the cost of the staple gun being offset by savings in hospital stay. Should the price of the gun change, the conclusions of the economic analysis may also change. Some

training may be required in the use of the staple gun; this is not expected to have major resource implications. An adequately powered, good-quality RCT is required, comparing Stapler Hemorrhoidectomy with Milligan Morgan hemorrhoidectomy, recruiting patients with second, third and fourth degree hemorrhoids, and having a minimum follow-up period of 5 years to ensure an adequate evaluation of the re intervention rate. Other areas for research are the effectiveness of SH in patients with fourth degree hemorrhoids and patients with co-morbid conditions, the re intervention rates for all treatments for hemorrhoids, utilities of patients up to 6 months post-operatively, the trade-offs of patients for short-term pain versus long-term outcomes.

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