

# A Prospective Study of Outcomes of Patients with Hemorrhoids after Minimal Invasive Procedure for Hemorrhoids

Tapan Atulkumar Shah<sup>1</sup>, Jatinkumar Bipinchandra Modi<sup>2</sup>, Jaimin Dipakkumar Shah<sup>3</sup>, Rajesh Shah<sup>4</sup>, Divyata Vasa<sup>5</sup>, Yagnik Katara<sup>6</sup>

Received on: 30 April 2022; Accepted on: 20 May 2022; Published on: 07 December 2022

## ABSTRACT

**Introduction:** Hemorrhoids are commonly reported anorectal diseases in which veins in the rectum and anal canal get swollen and inflamed, which causes discomfort and bleeding. Within the normal anal canal, there are specialized, highly vascularized cushion-forming discrete masses of thick submucosa containing blood vessels, smooth muscle, and elastic and connective tissue. They are located in the left-lateral, right-anterior, and right-posterior quadrants of the canal to aid in anal continence. The term *hemorrhoids* should be restricted to clinical situations in which these cushions are abnormal and cause symptoms. Hemorrhoids are a result of sliding downward of these cushions. Hemorrhoids result from disruption of the anchoring and flattening action of musculus submucosa and (Tretiz's muscle) its richly intermingled elastic fibers. Conventional hemorrhoidectomy is the open surgical procedure in which the hemorrhoid pedicle is ligated by transfixing suture. Stapled hemorrhoidopexy (SH) was introduced by Longo that requires no external incision, instead, hemorrhoidal tissue is lifted into ring of tissue with suture and a stapler removes the hemorrhoids, effectively cutting off blood flow to the tissue.

**Aims and objectives:** The current study defines the efficacy of stapled hemorrhoidopexy and its consequences.

**Materials and methods:** It is an institutional prospective study, including patients on which stapled hemorrhoidopexy was done from 4th January, 2019 to 6th December, 2020, who consented to be a part of the study. These patients were followed up through regular visits to the OPD every week for the first month, every 15 days for the next 2 months, and later via telephonic conversations up to a period of 6 months post surgery. Stapled hemorrhoidopexy was performed as per the procedure. Patients were discharged after successful completion of the operation. All clinical variables were collected from a standardized questionnaire evaluation obtained through office follow-up.

**Results:** Total 166 patients: 142 males and 24 females underwent SH (male:female ratio was 5.92:1). The mean age being  $44.75 \pm 12.99$  years. After operation, patients were discharged on postoperative days 1–4; the mean being  $1.67 \pm 0.66$  days. None of the patients had bleeding in the immediate post or period up to 1 month. Nine patients (5.4%) complained of pain in the immediate postoperative period, 1 had grade III hemorrhoids, 2 had grade II hemorrhoids, 2 had bleeding per rectally with grade II internal hemorrhoids, 1 had interno-external piles, 1 had prolapsed piles, 2 had thrombosed piles. In total, 3 had edema in the early postoperative period, 1 had interno-external piles, 1 had prolapsed piles, and 1 had thrombosed piles.

After 1 month, 4 (2.40%) had complained of bleeding per rectally, and none of the patients developed incontinence at the 6-month follow-up. Two patients had a recurrence of reports that had interno-external piles. Two patients who had developed peri-purse-string hematoma developed partial stricture in the long run.

The mean blood loss during surgery was  $44.39 \pm 8.08$  mL, the mean duration of surgery was  $25.13 \pm 3.24$  min, and the mean duration of patients returning to work after surgery was  $5.08 \pm 1.17$  days. The overall success rate was 98.2%.

**Conclusion:** Stapled hemorrhoidopexy represents a relatively simple and fast operation with less blood loss during surgery, especially when compared with other traditional procedures. The cost of minimal invasive procedure for hemorrhoids (MIPH) gun was the only major limitation.

**Keywords:** Hemorrhoid, Minimal invasive procedure for hemorrhoids, Stapled hemorrhoidopexy.

*World Journal of Laparoscopic Surgery* (2022): 10.5005/jp-journals-10033-1541

## INTRODUCTION

Hemorrhoids are commonly reported anorectal diseases in which veins in the rectum and anal canal get swollen and inflamed, which causes discomfort and bleeding. Clinical presentation of the patient comes to hospital with grade III or IV hemorrhoids. The treatment modality of hemorrhoid may be medical or surgical. A surgical modality is used in patients with grade III and IV hemorrhoids and concomitant anorectal pathology as well as in patients not responding to medical management. The conventional surgical techniques such as Milligan–Morgan's open hemorrhoidectomy and Ferguson's closed hemorrhoidectomy were preferred choices for the surgery in these patients and were considered to be the "gold standard" till the evolution of SH

<sup>1–6</sup>Department of General Surgery, AMC MET Medical College, Sheth Lallubhai Gorthandas Municipal General Hospital, Maninagar, Ahmedabad, Gujarat, India

**Corresponding Author:** Jatinkumar Bipinchandra Modi, Department of General Surgery, AMC MET Medical College, Sheth Lallubhai Gorthandas Municipal General Hospital, Maninagar, Ahmedabad, Gujarat, India, Phone: +91 9727772479, e-mail: jatin50100@gmail.com

**How to cite this article:** Shah TA, Modi JP, Shah JD, *et al.* A Prospective Study of Outcomes of Patients with Hemorrhoids after Minimal Invasive Procedure for Hemorrhoids. *World J Lap Surg* 2022;15(3):220–223.

**Source of support:** Nil

**Conflict of interest:** None

using a transonic circular stapling instrument, introduced by Dr Antonio Longo in the 1990s.<sup>1-4</sup>

Stapled hemorrhoidopexy is a technique that is globally accepted and widely used. Even though there is chance of recurrence and it is also a costly procedure as compared with open methods. The minimally invasive procedure for hemorrhoids or MIPH has made significant strides in the field of proctology.<sup>5</sup> The principle of this operation is to remove and cut off anal hemorrhoidal vascular cushion from an area above the dentate line and reposit the anal columns in such a way that the staple line is above the dentate line.<sup>5,6</sup>

## MATERIALS AND METHODS

It represents an institutional prospective study and included patients who underwent MIPH operated on 4th January, 2019–6th December, 2020. Written informed consent was taken from patients prior to study enrollment. The patients undergoing SH were followed up through regular visits to the outpatient department every week for 1 month, every 15 days for the next 2 months, and up to a period of 6 months post surgery.

### Eligibility Criteria

Patients who had undergone MIPH surgery.

### Exclusion Criteria

Age less than 18 years, hemorrhoids were associated with any other anal pathology during surgery.

All clinical data were collected from a standardized questionnaire evaluation obtained through follow-up. The following variables were recorded in all cases: age, gender, grade of hemorrhoid disease, previous treatment, complications like pain, edema, per-rectal bleeding, urinary retention in the early postoperative period (up to 1 month post surgery), and complications like perianal pain, edema, per-rectal bleeding, and stricture formation of the late postoperative period (from 2nd month up to 6th month post surgery). Operative time was recorded in minutes on indoor case paper. Intraoperative blood loss was calculated by wetting 10 × 10 cm gauze with blood. If the gauze piece was 25%, 50%, 75%, and 100% soaked with blood, it was considered as 3 mL, 6 mL, 9 mL, and 12 mL of blood loss, respectively.<sup>7-9</sup>

Bowel preparation was done 24 hours before surgery by proctoclysis enema and diet restriction. Antibiotic was given after giving spinal anesthesia before giving the lithotomy position.

The MIPH procedure was done by placing of purse-string suture with 2/0 polypropylene in the submucosa 2–3 cm proximal dentate line. The purse string was tightened as the specially designed circular stapler was inserted into the rectum. After the anvil passes proximal to purse string, the suture ends were pulled through a channel in the stapler to use as stay suture and manipulate the redundant rectal mucosa. The stapler was closed and fired, and pressure was held to aid in hemostasis. After stapler withdrawal, additional sutures were required for hemostasis. Patients were routinely discharged after the operation.

## RESULTS AND OBSERVATIONS

Total 166 patients: 142 male patients and 24 female patients (male:female ratio was 5.92:1) underwent SH. The mean age was 44.75 ± 12.99 years (Table 1) (Figs 1 to 3).

After operation, patients were discharged on postoperative days 1–4 with mean being 1.67 ± 0.66 days. About 70 patients

**Table 1:** Distribution of patients undergoing MIPH

Diagnosis	No. of patients	%
Bleeding PR with grade II internal hemorrhoids	40	24.1%
Grade III hemorrhoids	52	31.3%
Grade III hemorrhoids	28	16.9%
Interno-external piles	14	8.4%
Prolapsed piles	22	13.3%
Thrombosed piles	10	6.0%



**Fig. 1:** Gender-wise distribution

were discharged on postoperative day 1. About 82 patients were discharged on day 2. About 12 patients were discharged on postoperative day 3 (8 prolapsed piles, 2 thrombosed piles, and 2 bleeding per rectally with grade II piles). About 2 patients were discharged on postoperative day 4 (grade III hemorrhoids, procedure converted to open due to poor exposure).

### Postoperative Complications

In total, 9 patients (5.4%) complained of pain in immediate postoperative period, 1 had grade III hemorrhoids, 2 had grade II hemorrhoids, 2 had bleeding per rectally with grade II internal hemorrhoids, 1 had interno-external piles, 1 had prolapsed piles, and 2 had thrombosed piles. The immediate pain was relieved with multiple analgesic doses (Table 2).

In total, 3 had edema in the early postoperative period, 1 had interno-external piles, 1 had prolapsed piles, and 1 had thrombosed piles. The edema was resolved with hot-sit bath with local ointment application.

None of the patients had bleeding in the immediate post or period up to 1 month. None of the patients had complained of urinary retention in the immediate postoperative period.

After 1 month, 4 (2.40%) had complained of bleeding per rectally in the follow-up visit, which was controlled with medication and 3 (1.80%) had perianal pain in the long run.

None of the patients developed incontinence at the 6-month follow-up. Two patients who had developed peri-purse-string hematoma developed partial stricture in the long run. About 2 patients had recurrence with interno-external piles in follow-up visits between 4 and 6 months (Tables 3 and 4).

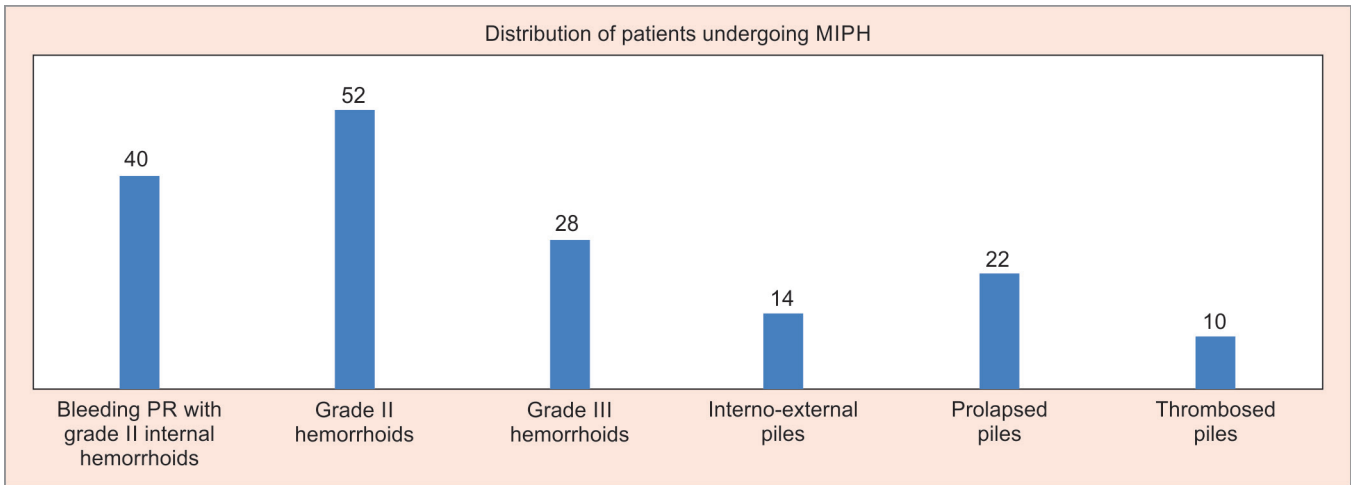


Fig. 2: Distribution of patients undergoing MIPH

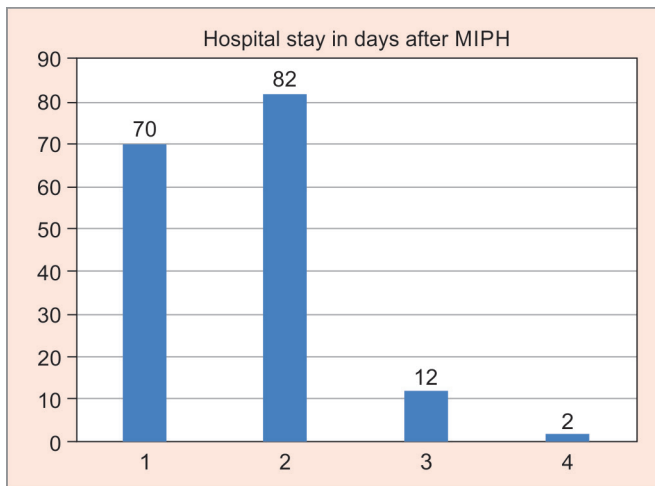


Fig. 3: Hospital stay in days after MIPH

Table 2: Requirement of analgesic dose

Requirement of analgesic doses in postoperative period	No. of patients	%
Required single dose of analgesic	9	5.5%
Required multiple doses of analgesic	157	94.5%

Table 3: Postoperative complications

Presentation	Immediate pain	Immediate edema	Recurrence	Bleeding PR	Stricture	Perianal pain
Grade II hemorrhoids	2	0	0	0	0	0
Grade III hemorrhoids	1	0	0	0	0	0
Bleeding PR with grade II hemorrhoids	2	0	0	0	0	0
Interno-external piles	1	1	2	2	1	2
Thrombosed piles	2	1	0	1	0	0
Prolapsed piles	1	1	0	1	1	1
<b>Total</b>	<b>9</b>	<b>36</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>3</b>

About 3 patients had failure of surgery within 6 months. Among 3 patients, 1 patient had recurrence of interno-external piles, 1 patient had particle stricture, and 1 patient had particle stricture followed by interno-external piles. All 3 patients needed revised surgery.

### DISCUSSION

Conventional hemorrhoidectomy surgeries like the Milligan–Morgan operation and the Ferguson’s closed hemorrhoidectomy have been very effective for long-lasting symptomatic control. But a major drawback of these surgeries is significant postoperative pain that is the prime cause of detention and hesitation of treatment. The ideal treatment for hemorrhoids should be free of uneventful consequences like pain and bleeding.

Stapled hemorrhoidopexy was introduced in 1998 as an alternative to conventional hemorrhoidectomy techniques, which

Table 4: Various factors in MIPH surgery

Mean blood loss during surgery	44.39 ± 8.08 mL
Mean duration of surgery	25.13 ± 3.24 min
Mean duration of patients returning to work after surgery	5.08 ± 1.17 days
Overall success rate of MIPH	98.2%
Overall failure rate of MIPH	1.8%

is significant innovation in the treatment of hemorrhoids. Instead of removing columns of hemorrhoidal tissue, this operation removes a sleeve of distal-most rectal mucosa and submucosa, elevating the anal canal and fixing it in place (hence anopexy) and radically reducing the redundancy of mucosa.<sup>10,11</sup>

Several randomized controlled trials described the safety and effectiveness of MIPH. Systematic reviews of randomized controlled trials followed by meta-analyses have demonstrated that the short-term outcomes result in favor of MIPH when compared with traditional excisional techniques.<sup>12</sup> Chiefly, MIPH has several advantages over conventional hemorrhoidectomy, such as minimal pain with minimal blood loss, minimal operative time, quick recovery, and reduced hospital stay. However, meta-analyses of randomized controlled trials have described that MIPH has a higher recurrence rate than conventional hemorrhoidectomy. Minimal invasive procedure for hemorrhoids appears to be an easy and rapid operation rather than other transanal dearterialization procedures. But during the procedure, technical errors have a vital role in the recurrence rate when compared with conventional hemorrhoidectomy. Estimating of removal of the amount of prolapsed mucosa is a major practical drawback of the procedure of MIPH. But, however, the simple logic is to resect a larger amount of rectal mucosa in a higher degree of hemorrhoid prolapse.

## CONCLUSION

Stapled hemorrhoidopexy represents a relatively easy and rapid operation with less blood loss during surgery, especially when compared with other traditional procedures. The cost of MIPH gun was the only major limitation. However, due to existing evidence during the procedure, technical errors have a vital role in recurrence rate when compared with conventional hemorrhoidectomy. In spite of this controversy, SH is being used successfully in the management of hemorrhoids.

## REFERENCES

1. Araujo SEA, Horcel L de A, Seid VE, et al. Resultados tardios após hemorroidopexia mecânica isolada e complementada por operação excisional. *Arq Bras Cir Dig* 2016;29(3):159–163. DOI: 10.1590/0102-6720201600030008.
2. Au-Yong I, Rowsell M, Hemingway DM. Randomised controlled clinical trial of stapled haemorrhoidectomy vs conventional haemorrhoidectomy; a three and a half year follow-up. *Colorectal Dis* 2004;6(1):37–38. DOI: 10.1111/j.1463-1318.2004.00496.x.
3. Bikhchandani J, Agarwal PN, Kant R, et al. Randomized controlled trial to compare the early and mid-term results of stapled versus open hemorrhoidectomy. *Am J Surg* 2005;189(1):56–60. DOI: 10.1016/j.amjsurg.2004.03.014.
4. Boccasanta P, Capretti PG, Vebturi M, et al. Randomised controlled trial between stapled circumferential mucosectomy and conventional circular hemorrhoidectomy in advanced hemorrhoids with external mucosal prolapse. *Am J Surg* 2001;182(1):64–68. DOI: 10.1016/s0002-9610(01)00654-7.
5. Burch J, Epstein D, Baba-Akbari A, et al. Stapled haemorrhoidectomy (haemorrhoidopexy) for the treatment of haemorrhoids: A systematic review and economic evaluation. *Health Technol Assess* 2008;12(8): 1–193. DOI: 10.3310/hta12080.
6. Burch J, Epstein D, Sari AB, et al. Stapled haemorrhoidopexy for the treatment of haemorrhoids: A systematic review. *Colorectal Dis* 2009;11(3):233–243. DOI: 10.1111/j.1463-1318.2008.01638.x.
7. Cheetham MJ, Cohen CR, Kamm MA, et al. A randomized, controlled trial of diathermy hemorrhoidectomy vs. stapled hemorrhoidectomy in an intended day-care setting with longer-term follow-up. *Dis Colon Rectum* 2003;46(4): 491–497. DOI: 10.1007/s10350-004-6588-z.
8. Johanson JF, Sonnenberg A. The prevalence of hemorrhoids and chronic constipation. An epidemiologic study. *Gastroenterology* 1990;98(2):380–386. DOI: 10.1016/0016-5085(90)90828-o.
9. Ganz RA. The evaluation and treatment of hemorrhoids: A guide for the gastroenterologist. *Clin Gastroenterol Hepatol* 2013;11(6): 593–603. DOI: 10.1016/j.cgh.2012.12.020.
10. Ali Algadiem E, Aleisa AA, Alsubaie HI, et al. Blood loss estimation using gauze visual analogue. *Trauma Mon* 2016;21 (2):e34131. DOI: 10.5812/traumamon-34131.
11. Longo A. Treatment of hemorrhoids disease by reduction of mucosa and hemorrhoidal prolapse with a circular suturing device: A new procedure. *Proceedings of the 6th World Congress of Endoscopic surgery*. Monduzzi Publishing Bologna, Rome, Italy; 1998: pp. 777–784.
12. Mehigan BJ, Monson JR, Hartley JE. Stapling procedure for hemorrhoids versus Milligane Morgan. *Hemorrhoidectomy: Randomized controlled trial*. *Lancet* 2000;355(9206):782–785. DOI: 10.1016/S0140-6736(99)08362-2.