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A COMPARATIVE STUDY BETWEEN CLASSICAL MILLIGAN-MORGAN VS LIGATION FIRST MODIFICATION OF MILLIGAN-MORGAN HEMORRHOIDECTOMY

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ABSTRACT

Background: Symptomatic hemorrhoids are a common anorectal condition affecting individuals across various age groups and both genders. Multiple surgical techniques have been developed to manage this condition, with continual modifications aiming to reduce complications, particularly postoperative bleeding and pain. Aim: This study aimed to compare the clinical outcomes of the conventional Milligan-Morgan hemorrhoidectomy (MMH) with a modified technique-ligation first Milligan-Morgan hemorrhoidectomy (LF-MMH). Patients and Methods: A randomized comparative study was conducted on 136 patients diagnosed with symptomatic hemorrhoids. Patients were randomly allocated into two groups: Group A (66 patients) underwent conventional MMH, while Group B (70 patients) received LF-MMH. All patients were followed up for one week postoperatively to assess outcomes and complications. Results: The mean age of the patients was 37.5 years, with 84 males and 52 females; no significant gender-related differences were observed between groups. The type of anesthesia used showed no statistical significance. The operative time for LF-MMH was significantly shorter (15 minutes) compared to conventional MMH (18 minutes). Intraoperative blood loss was also significantly reduced in Group B (30 ml) compared to Group A (50 ml). Two cases in Group A required postoperative repacking due to bleeding, whereas no such cases occurred in Group B, although this difference was not statistically significant. No cases of anal stenosis were reported in either group. Conclusion: LF-MMH offers superior vascular control, leading to reduced intraoperative blood loss, fewer postoperative complications, and potentially lower analgesic requirements. This technique may represent a safer and more effective alternative for hemorrhoid surgery.

KEYWORDS: Milligan-Morgan, hemorrhoidectomy, hemorrhoid.

INTRODUCTION

Hemorrhoids have been recognized since ancient times, with documented references to topical treatments appearing in Egyptian papyri as early as 1700 BC. The first surgical management of hemorrhoids was described by Hippocrates in 460 BC. Although often referred to as a disease, "hemorrhoids" actually denotes normal vascular anatomical structures within the anal canal that contribute to continence. These submucosal vascular cushions are located proximal to the dentate line and become symptomatic when enlarged or inflamed.^[1] Symptomatic hemorrhoids are one of the most prevalent

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anorectal disorders, commonly presenting with painless bright red rectal bleeding following defecation, perianal discomfort, itching, mucous discharge, soiling, bulging, or prolapse.^[2] The incidence is similar among males and females^[3], but many patients delay seeking medical care due to embarrassment or social stigma.^[4,5] Globally, the prevalence of symptomatic hemorrhoids in the general population is estimated at 4.4%, though up to 50–66% of individuals may experience hemorrhoidal symptoms during their lifetime.^[6] Beyond physical discomfort, hemorrhoids also impose a financial burden. Medical expenses may include consultations with general practitioners or specialists, OTC or prescription medications, and potential surgical interventions such as band ligation, sclerotherapy, or hemorrhoidectomy. Additionally, patients may suffer reduced work productivity due to absenteeism or impaired concentration, particularly in jobs involving prolonged sitting. In some cases, symptoms may lead to career changes or early retirement. Further costs may arise from lifestyle adjustments, such as the purchase of fiber-rich foods or stool softeners.^[7] Hemorrhoids are classified anatomically as internal or external, depending on their relation to the dentate line. Internal hemorrhoids lie superior to the dentate line and are covered by mucosa^[6], while external hemorrhoids lie inferior to it and are covered by skin.^[7] The anal canal typically contains three primary hemorrhoidal cushions (left lateral, right anterior, and right posterior), with minor cushions interspersed between them.^[8] The severity of internal hemorrhoids is graded according to Goligher's classification.^[9]

- Grade I: bleeding without prolapse
- Grade II: prolapse with straining, reducing spontaneously
- Grade III: prolapse requiring manual reduction
- Grade IV: irreducible prolapse

Grades III and IV are generally refractory to conservative treatment and require surgical intervention. pathophysiology involves deterioration The of supporting tissues, leading to the downward displacement of anal cushions and venous plexus dilation.^[10] The Milligan-Morgan hemorrhoidectomy has long been the gold standard for treating advanced hemorrhoids, particularly grades III-IV. However, it is associated with significant postoperative pain, bleeding, and complications such as sphincter dysfunction, edema, and anal stenosis. This study aims to compare the outcomes of the classical Milligan-Morgan procedure with modified technique-ligation first а hemorrhoidectomy-to evaluate whether the modification can reduce complications while maintaining surgical efficacy.

METHOD

This prospective study included 136 patients diagnosed with symptomatic grade III-IV hemorrhoids who failed conservative medical management and were scheduled for surgical intervention. The procedures were performed at Al-Imammien Al-Kadhemin Teaching Hospital and affiliated private hospitals in Baghdad, Iraq, between October 2023 and October 2024, by a consistent surgical team. Patients were randomly assigned into two groups. Group A (66 patients) underwent classical Milligan-Morgan hemorrhoidectomy (MMH), while Group B (70 patients) received the modified ligation-first hemorrhoidectomy (LF-MMH). Diagnosis was based on patient history and clinical examination. All patients were positioned in the lithotomy position, and prophylactic intravenous antibiotics were administered one hour before surgery. Informed consent was obtained from all participants, with procedures, outcomes, and potential complications explained in simple, understandable language. Postoperative follow-up was conducted on days 1-2 and again after one week. Inclusion criteria were patients aged 17-67 years with grade III or IV hemorrhoids as per Goligher's classification.^[9] Exclusion criteria included contraindications to anesthesia, coagulopathy, previous hemorrhoidectomy. concomitant anal pathologies (fissure, fistula, abscess), inflammatory bowel disease, renal failure, or liver disease. The surgical steps for both groups began with general or spinal anesthesia, patient sterilization using iodine solution, and careful anal sphincter stretching. Hemorrhoids were visualized and grasped with Allice forceps at the dermo-cutaneous junction. In the LF-MMH group, arterial control was established by clamping the hemorrhoidal pedicle with artery forceps followed by ligation using a figure-ofeight absorbable 2-0 suture above the dentate line, then excision was performed using electrocautery or sharp dissection. Hemostasis was ensured, and sterile gauze packing was applied. Group A underwent the standard MMH technique as described by Milligan and Morgan.^[11] Statistical analysis was conducted using SPSS software. Chi-square tests assessed categorical variables, and independent t-tests evaluated continuous variables. A p-value < 0.05 was considered statistically significant.

RESULTS

we performed 136 operation for patients suffering from grade III-IV hemorrhoids classified into group A and group B, group A underwent conventional Milligan-Morgan hemorrhoidectomy (66) cases, and group B underwent modified method (ligation first) (70) cases, there were 84 males (61.8%) and 52 females (38.2%) see figure (3.1) below, included arranged as 44 male and 22 female in group A(MMH) and 40 male and 30 female in group B(LF-MMH) the mean age group is 37.5 ± 13.1 years for all cases, with group A 34 ± 10.8 years and group B 39.6 ± 14.4 , see (Figure3.2). below ...in regard with gender 61.8% were males and 32.2% were females no difference is observed. All clarified in Table 1 below.

 Table 1: Gender and age of both groups.

Parameters	Total	Group A (classical) 66	Group B (modified) 70	P value
Gender	84 (61.8%)	44 male	40 male	0.24
	52 (33.2%)	22 female	30 female	
Age	37.5±13.1	34.6±10.8	39.6±14.4	0.78

The type of anesthesia and the time needed for the operations to be done, the number of cases underwent surgery under GA is 50, 26 with group A(MMH) and 24 with group B (LF-MMH) and the P value was 0.53

which is not significant, the number of patients underwent surgery under spinal anesthesia is 86 cases 40 in group A and 46 cases in group B the P value is 0.92 which is insignificant. As in table 2 and fig 1.



Figure 1: Mean Duration of Operation In Both Groups.

Table 2: Type of anesthesia and operation duration in both groups	Table 2: Type of a	anesthesia and	operation	duration i	in both	groups.
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Parameter	Group A	Group B	P value	
Type of anesthesia	26 (GA)	24 (GA)	0.53	
	40 Spinal	46 spinal	0.92	
Operative dynation	Mean ± SD	Mean±SD	< 0.001	
Operative duration	18 minute ±4	Minute15±3.7	< 0.001	

Complications in both procedures: The comparison between the two groups in regard with complications, intra op bleeding is strongly significant with mean bleeding amount is 50 ml and the standard deviation is 4.5 in group A and 30 ml and the standard deviation is 5 in group B (LF-MMH), the P value is < 0.001, in regard with post op bleeding there is two cases that needed repacking after intervention in group A(MMH) while in group B no cases needed the intervention although its devastating complication but the P value was 0.15 which is not significant, both of the two groups didn't develop any anal stenosis as a complication, but pain and urine retention was different between the two groups, the mean for pain was 6.54 in group A(MMH) and 5.74 for group B(LF-MMH) and the P value is 0.016, only 4 cases developed urine retention in group A with 11.3 % of the cases and 1 cases in group B the P value was 0.17 which is not significant. Below table (3) clarify all.

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Parameters	Group A (classical)66	Group B (modified)70	P-value
Intro on blooding loss	Mean ± SD	Mean ± SD	< 0.001
intra op bleeding loss	$50 \text{ ml} \pm 4.5$	$30 \text{ ml} \pm 5$	< 0.001
Post op bleeding	2 cases	None	0.15
Doin	Mean ± SD	Mean ± SD	0.016
Pain	6.545 ± 2	5.74 ±1.8	0.016
Urine retention	4 cases 11.3%	1 cases 8.6%	0.17
Anal stenosis	No cases	No cases	

DISCUSSION

The classical Milligan-Morgan hemorrhoidectomy (MMH) has long been the standard treatment for grade III-IV hemorrhoids due to its effectiveness in removing prolapsed tissue. However, it is associated with notable postoperative pain, prolonged healing, and complications such as bleeding, urinary retention, and, in some cases, anal stenosis (Rivadeneira et al., 2011).^[12] These concerns have driven the development of various modified surgical approaches aimed at minimizing tissue trauma, improving vascular control, and enhancing recovery (Nienhuijs et al., 2013).^[13] Several studies

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support the superiority of modified techniques over the classical method. For example, Tan et al. $(2016)^{[14]}$ and Gupta et al. $(2018)^{[15]}$ demonstrated that modifications using devices like LigaSure reduced operative time, intraoperative bleeding, and postoperative pain, without increasing recurrence rates. Similarly, Chen et al. $(2020)^{[16]}$ reported in their meta-analysis that energy-based modifications led to better short-term outcomes. However, such technologies add financial burden and may not be suitable in low-resource settings. Bessa $(2015)^{[17]}$ noted that classical MMH remains effective

and reliable, especially when advanced tools are not accessible.

In our study, the ligation-first MMH (LF-MMH) method showed notable advantages in reducing intraoperative blood loss and minimizing postoperative bleeding compared to the classical approach, aligning with findings by Armstrong et al. (2002)^[11] and Ramadan et al. (2002)^[18], who found improved outcomes with harmonic scalpel techniques. According to the Italian Society of Colorectal Surgery (SICCR) guidelines (2020)^[19], MMH remains the preferred method for grade III-IV hemorrhoidectomy. Non-excisional alternatives like Doppler-guided hemorrhoidal artery ligation (DG-HAL) may reduce pain and bleeding but are associated with higher recurrence rates ranging from 3% to 24%.^[20] Moreover, Gupta et al.^[21] questioned the additional value of DG-HAL over blind HAL, citing longer operative durations and increased costs. Our LF-MMH approach resembles blind HAL in vascular control but includes excision of prolapsed hemorrhoids, thereby addressing recurrence and eliminating the need for costly tools. We found significantly less bleeding in the LF-MMH group, which corresponds with Haksal et al.'s^[22] report of a 12.9% postoperative bleeding rate in classical MMH. Gerbershagen et al.^[23] ranked hemorrhoidectomy among the most painful surgical procedures, with 22.2% of patients requiring opioids postoperatively Gallardo et al.^[24] LF-MMH may reduce this burden by ensuring better hemostasis and less tissue trauma. However, our study has limitations, including a relatively small sample size, short follow-up, male predominance, and surgeries conducted by a single team. These factors may limit generalizability and introduce bias. Broader multicenter studies with longer follow-up and larger samples are needed to validate these findings.

CONCLUSION

LF–MMH has better vascular control that ensure lower rates of complications which need less analgesia consumption and fewer bleeding intraoperatively and post operatively that may need intervention with good results in anal stenosis prevention.

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