ORIGINAL ARTICLE

Prospective Randomized Study to Evaluate Surgical Hemorrhoidectomy, Laser Hemorrhoidoplasty and Conservative Treatment of Third-Degree Hemorrhoids

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Abstract

Background: ***On a global scale, hemorrhoids outnumber rectum and colon disorders by a significant margin. Their current global prevalence is thought to be 4% symptomatic, with estimates ranging from 2.9% to 27.9%. Patients between the ages of 45 and 65 have the greatest incidence, according to the Gauss technique. It disproportionately affects men.***

Aim of study: ***To compare third-degree hemorrhoid patients treated with conservative measures, laser hemorrhoidoplasty, and the traditional Milligan-Morgan method.***

Patients and method: ***Sixty patients with third-degree piles who visited the general surgery department at Al-Azhar University Hospitals between August 2023 and June 2024 were randomly assigned to one of three groups: Group A, which consisted of twenty patients who had Milligan morgan hemorrhoidectomy, Group B, which consisted of twenty patients who had laser hemorrhoidectomy, and Group C, which consisted of twenty patients who had conservative treatment.***

Results: ***Laser ablation of third-degree hemorrhoids was found to be superior to Milligan-Morgan hemorrhoidectomy and conservative treatment regarding post-treatment pain, complications, rehabilitation and returning to the mundane. Operative time is significantly shorter in laser hemorrhoidectomy than in Milligan-Morgan hemorrhoidectomy.***

Conclusion: ***In view of the result of the present study as well as recent published data in literature in the treatment of 3rd degree hemorrhoids, it can be suggested that laser hemorrhoidoplasty shows better patient satisfaction, shorter treatment time, less complications, and early return to normal life. compared to Milligan morgan hemorrhoidectomy and conservative treatment.***

Keywords: Surgical hemorrhoidectomy; Laser hemorrhoidoplasty; Hemorrhoids

1. Introduction

On a global scale, hemorrhoids outnumber rectum and colon disorders by a significant margin. As of today, their estimated global prevalence ranges from 2.9% to 27.9%, with 4% of the population exhibiting symptoms. Patients between the ages of 45 and 65 have the greatest incidence, according to the Gauss technique. The incidence is higher in men than in women. In 2021, the World Health Organization reported that: Hemorrhoids affect 18% of Egyptians, both men and women, and the age range of those affected is quite broad.[1]

Both the selection of medications and the comparison of their therapeutic efficacy can be facilitated by a hemorrhoid classification system. In most cases, the location and degree of prolapse of a hemorrhoid determine its classification. The mucosa-covered internal hemorrhoids emerge from the dilated venules of the inferior hemorrhoidal venous plexus just above the dentate line, and the squamous epithelium-covered external hemorrhoids are situated below the dentate line.[2]

Internal hemorrhoids are further classified according to Goligher's criteria, which takes into account the degree of prolapse in addition to the appearance of the hemorrhoids .[3]

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The anal cushions bleed while not protruding in first-degree hemorrhoids, also known as grade I. Anal cushions prolapse through the anus with straining in second-degree hemorrhoids (grade II), but they eventually shrink on their own. As a result of straining or exercise, the anal cushions prolapse through the anus and must be manually replaced into the anal canal in cases of third-degree hemorrhoids (grade III). Continual prolapse and irreducible severity characterize fourth-degree hemorrhoids (grade IV).

This study set out to compare three different treatments for third-degree hemorrhoids: conservative management, laser hemorrhoidoplasty , and the traditional Milligan-Morgan hemorrhoidectomy.

2. Patients and methods

From August 2023 through June 2024, sixty patients undergoing treatment for third-degree hemorrhoids at Al-Azhar University Hospitals participated in this prospective randomized trial. Three groups were formed from the patients' random classifications: Twenty patients with Milligan-Morgan hemorrhoids were placed in Group A, twenty patients with laser hemorrhoidoplasty were placed in Group B, and twenty patients with conservative treatment were placed in Group C.

Ethical consideration:

The Al-Azhar University Faculty of Medicine's local ethical committee gave their blessing to the research. After discussing the surgery's advantages and potential risks with each patient, they were asked to sign an informed written consent form before the procedure could proceed.

Inclusion criteria:

If you are between the ages of 15 and 70 and have primary or third-degree hemorrhoids, and you haven't had any treatment for them before, you should consult a doctor.

Exclusion criteria:

Age less than 15 years and more than 70 years old; first, second and fourth degrees of hemorrhoids; patients with hemorrhoids accompanied by other anal conditions; patients with impaired anal sphincter function or fecal incontinence, and patients with recurrent hemorrhoids, complicated hemorrhoids, as well as patients unfit for anesthesia.

Preoperative workup:

A thorough medical history and physical examination were administered to each patient (painless bleeding at the end of defecation, on the paper of the toilet, and one or more small soft lumps that hang down from the anus and can be pushed up inside).

Methodology:

Group (A): A standard Milligan-Morgan hemorrhoidectomy was done on all patients of group A.

Group (B): Laser hemorrhoidectomy was done using a 1470nm diode laser through insertion of optic fibers in hemorrhoids, generating laser shots in a pulsed fashion, causing shrinkage of tissue. To reduce the negative impact of heat, an ice finger was placed intravenously for one or two minutes.

Group C: Conservative treatment: (1) Topical anal anesthetic (e.g., procto-Glyvenol) is applied for one week before the toilet. (2) Oral flavonoids (e.g., Daflon 1 gm): 6 tablets per day for 4 days, then 4 tablets per day for 3 days. (3) Laxatives: :3 times daily. (4) High fiber diets. (5) Sitz bath.

Post-operative care and follow-up:

Postoperative care: In group A and B patients, they were encouraged to resume oral feeding after 4 hours postoperatively. Analgesics are given on demand postoperatively in the first two days according to the severity of pain. Close observation for any postoperative rectal bleeding, urine retention and discharge for the first two weeks post-operatively. Once patients were able to tolerate a regular meal, were mobile, and felt well while using oral analgesics, they were cleared to go home. All patients were instructed to take antibiotics and laxatives for two weeks following their operation, while also practicing proper local hygiene.

Follow up protocol: all patients will be followed up on weekly visits for 2-weeks then monthly visits for 6-months then every 2-months till end of year.

Statistical analysis:

After data collection, editing, and coding, IBM SPSS 20 was utilized for data input. Parametrically distributed quantitative data were shown as means, standard deviations, and ranges, whereas qualitative data were percentages and numbers. The center value of a set of discrete integers is the sum of all the values divided by the number. Standard deviation measures data dispersion. If the standard deviation is low, the data cluster around the mean; if high, they are widely spread.

The median cuts the data set in half from highest to lowest. The median is less impacted by outliers than the mean, which is its main advantage. The Paired t-test compared the two groups using quantitative data and a parametric distribution. This is why the p-value was significant: If the p-value is more than 0.05, it is insignificant. A p-value is significant if <0.05 (95% confidence interval), P<0.001: Very important.

3. Results

This prospective study was conducted on 60 consecutive patients presented to the General Surgery department, Al-Azhar University Hospital. There were 26 males and 34 females with age ranging from 15-70 years old, and mean of 37.8 in group(A) and 35.2 in group(B) and 39.4 in group(C), among all patients there were 6 diabetic patients, 4 patients were hypertensive and one patient was asthmatic.

Table 1. Demographic data distribution among the groups under study.

	Laser hemorrhoid-dectomy group (N=20)	Milligan morgan hemorrhoidectomy group(N=20)	Conservative treatment group (N=20)	Test	P-value
Age (years) Mean±SD	35.2±6.4	37.8±7.2	39.4±6.8	F= 1.939	0.15
		Gender			
Male	8(40%)	11(55%)	7(35%)	X^2=	0.41
Female	12(60%)	9(45%)	13(65%)	1.765	

Statistical significance is indicated by a P-value of 0.05, whereas p-value of 0.001 indicates strong significance.F:ANOVA test, x2:qui square test.

According to this table, the average age of groups A, B, and C is 37.8±7.2, 35.2±6.4, and 39.4±6.8, respectively.

Table 2. Distributions of operative techniques between studied groups.

	Laser hemorrhoidectomy group(N=20)	Milligan morgan hemorrhoidectomy group(N=20)	Test	P-value
Operative time (in minutes) Mean±SD	16.2±5.8	26.1±4.5	t=6.03	≤0.001
Hospital Stay (in days) Mean±SD	0.68±0.21	1.23±0.21	t=8.28	≤0.001

t: unpaired t-test, P-value>0.05: Not significant, P-value~□0.05 is statistically significant, and p<0.001 is extremely significant.

The surgery time is displayed in this table; group (A) had a longer procedure with a mean±SD of 26.1±4.5, whereas group (B) had a shorter procedure with a mean±SD of 26.1±4.5. During the hospital stay, group (A) spent more time there (mean±SD = 1.23±0.21), while group (B) spent less time there (mean±SD = 0.68±0.21)

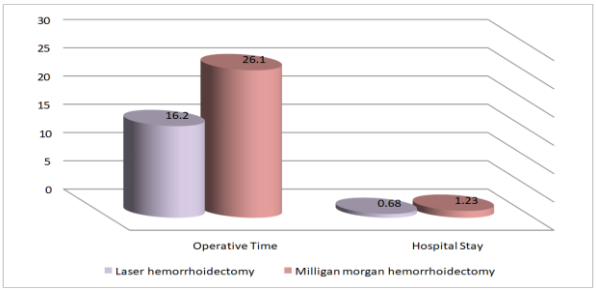

Figure 1. Distribution of hospital stays and operating times across the groups undergoing Milligan Morgan Hemorrhoidectomy and Laser Hemorrhoplasty.

Table 3. Distribution of visual analog scale (VAS) scores for pain on days 1, 8, and 21 following surgical procedures among the groups under study.

	Laser hemorrhoid-dectomy group N=20	Milligan morgan hemorrhoid-dectomy group N=20	Conservative treatment	Test	P-value
	Pain visual analog scale score(VAS score)				
Day 1 Mean ±SD	4.8±0.9	7.1±1.2	2.1	t=6.857	<0.001
Day 8 Mean ±SD	2.6±0.7	5.4±0.9	1.6	t=10.98	<0.001
Day 21 Mean ±SD	0	1.5±0.6		t=11.18	<0.001

t: unpaired t-test, P-value>0.05: Not significant, P-value~>0.05 is statistically significant, and p<0.001 is extremely significant.

This table shows that, on day 1, pain in group(A) ranged between 6-9 with Mean±SD; 7.1±1.2, while in group(B) ranged between 3-6 with Mean±SD; 4.8±0.9, and in group(C) ranged between 1-4 with Mean 2.1. On day 8, Pain in group(A) ranged between 4-7 with Mean±SD; 5.4±0.9 while in group(B) ranged between 2-4 with Mean±SD; 2.6±0.7 whereas in group(C) range between 1-3 with Mean 1.6. On day 21, Pain in group(B) was 0 while in group(A) ranged betw-1 to 3 with Mean±SD; 1.5±0.6 with P-value<0.001 which showed significant difference between both groups.

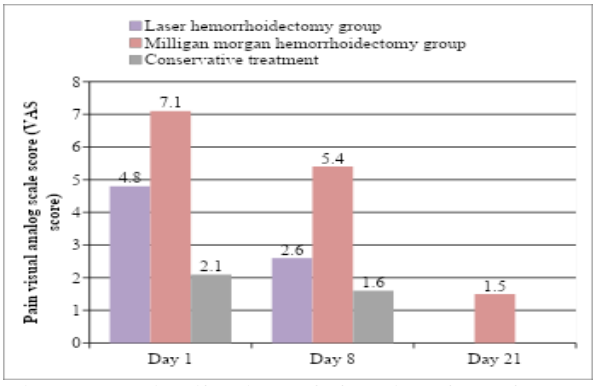

Figure 2. Distribution of the visual analog scale (VAS) scores for pain on days 1, 8, and 21 following surgery across the groups undergoing laser and Milligan-Morgan hemorrhoidectomy.

Table 4. Recovery and return to normal life rates following surgery across the groups under study.

	Laser hemorrhoid-dectomy group N=20	Milligan morgan hemorrhoid-dectomy group N=20	Test	P-value
		Recovery		
1-week	19(95%)	1(5%)	X^2=32.6	≤0.001
2-	1(5%)	8(40%)		

weeks		
3-weeks	0(0%)	8(40%)
4-weeks	0(0%)	3(15%)

This table shows that, in Group(A)1(5%) recovered in the first week, 8(40%) recovered in the second week, 8(40%) recovered in the third week while 3(15%) recovered in the fourth week. While in group(B) recovery was fast; 19 of 20(95%) returned to normal life in the first-week while only 1(5%) recovered in the second-week. The P-value was≤0.001 which showed a significant difference between both groups.

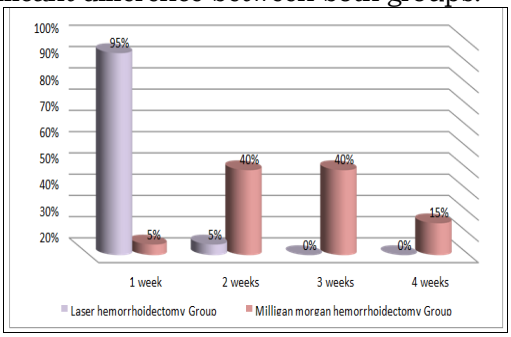

Figure 3. Distribution of recovery between laser hemorrhoidoplasty and Milligan morgan hemorrhoidectomy groups.

Table 5. Distributions of complications between studied groups.

	Laser hemorrhoid-dectomy group N=20	Milligan morgan hemorrhoid-dectomy group N=20	Conservative treatment	Test	P-value
Operation Bleeding	0(0%)	4(20%)	_____	X^2=4.4	0.03
Post-Operative Bleeding	0(0%)	5(25%)	Zero	X^2=5.7	0.01

This table shows that, there were 4 (20%) who had bleeding during operation and 5(25%) had bleeding postoperative in group(A) while no bleeding either operative or postoperative in group(B) and in group(C) there were no complications.

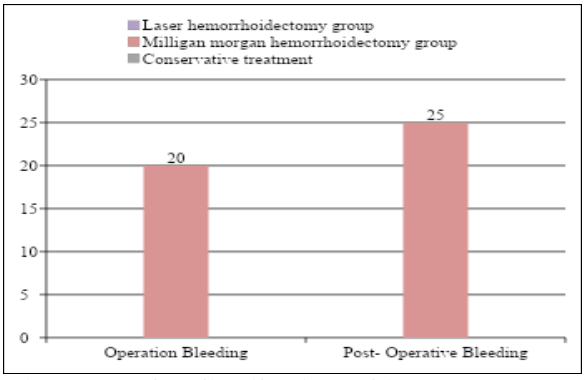

Figure 4. The distribution of issues among the categories under study.

Table 6. Distribution of pre- and post-treatment symptoms conservative treatment group.

	Pre-treatment symptoms (N=20)	post-treatment symptoms (N=20)	Test (x^2)	P-value
Pain	18(90%)	9(45%)	9.2	0.002
Bleeding	19(95%)	18(90%)	0.36	0.54
Swelling	20(100%)	20(100%)	0	1

P-value >0.05: Unimportant, P-Value <0.05 is statistically significant, and p <0.001 is extremely significant." The x2:qui square test.

This table shows that, in group(C) who had conservative treatment, before treatment there were 18(90%) who had pain. After treatment this number turned 9(45%). There were 19(95%) who had bleeding. After treatment this number turned 18(90%) while there was no change in the number of patients 20(100%) who had swelling.

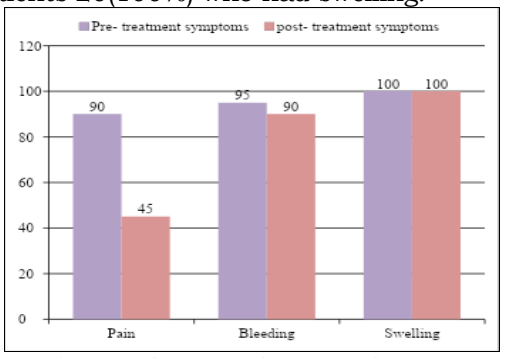

Figure 5. Distribution of pre- and post-treatment symptoms in conservative treatment group .

4. Discussion

According to the current results, which displayed the distribution of surgical techniques among the groups under study, the groups that underwent laser hemorrhoidoplasty and those that underwent Milligan-Morgan laser hemorrhoidoplasty differed significantly in terms of both operative time and length of hospital stay, favoring laser hemorrhoidectomy.

In agreement with Maloku et al.,[4] twenty patients underwent laser hemorrhoidoplasty and twenty patients underwent open surgical hemorrhoidoplasty as part of an outpatient treatment trial for symptomatic hemorrhoids. The participants included 23 men and 17 women with a mean age of 46 years. With a p-value<0.01, they demonstrated that the average operating time for hemorrhoidoplasty was 15.94±3.5 minutes, while for Milligan-Morgan laser hemorrhoidoplasty it was 26.76±5.8 minutes. This showed that the groups undergoing laser hemorrhoidectomy and those undergoing Milligan-Morgan laser hemorrhoidoplasty differed significantly with respect to the amount of time spent in the hospital and the duration of the operation.

According to Maloku et al.,[4] discovered that those treated with the LHP approach had far shorter hospital stays and surgical procedures

than those treated with the MM method.

In the same line with Mohammed et al.,[5] The average amount of time the operation took was 30.4±9.6 minutes in the laser group and 45±15 minutes in the MM group, with a p-value of 0.025. Similarly, the average number of days the patients had to spend in the hospital was 1±0.2 days in the laser group and 3.3±1.4 days in the MM group, with a p-value of 0.045. It was found that the groups undergoing laser hemorrhoidectomy and those undergoing Milligan-Morgan hemorrhoidectomy had significantly different operating times and lengths of hospital stays.

Our data revealed that on days 1, 8, and 21 following laser hemorrhoidectomy procedures, there was a significant difference in the distribution of pain visual analog scale scores (VAS scores). As for the VAS score, it was 4.8±0.9 on the first day, 2.6±0.7 on the second day, and 0 on the 21st day.

In agreement with Maloku et al.,[4] found that the hemorrhoidoplasty group experienced much less discomfort in the early postoperative period compared to the surgery group. Over the course of a month, identical results were obtained. Both the laser hemorrhoidoplasty and Milligan-Morgan laser hemorrhoidoplasty groups showed a statistically significant change in pain VAS score on days 1, 8, and 21.

Also, agreed with Elhefny et al.,[6] displayed the pain visual analog scale score (VAS score) distribution between the groups on 12 hours, 1 and 2 weeks post-operatively. They discovered a highly significant difference, with group A's pain scores being 4.17±0.73 and 1±0.38 after 1 and 2 weeks, and group B's scores being 1.7±0.65 and 0.38±0.49 after the same period, with a P-value of less than 0.001.

Similarly, as agreed with Maloku et al.,[4] Researchers set out to compare two approaches to treating grade 3 hemorrhoidal disease in a study involving 200 patients. Half of the patients received laser treatment (LHP), while the other half underwent an open surgical procedure known as the Milligan-Morgan (MM) hemorrhoidectomy. The researchers found that patients treated with the LHP had significantly less postoperative pain than patients treated with the MM technique (p-value <0.0001).

The three groups compared had significantly different rates of recovery and return to normal life following treatment: those who underwent laser hemorrhoidoplasty, those who underwent Milligan-Morgan hemorrhoidectomy, and those who received conservative treatment.

In agreement with Maloku et al.,[4] found a statistically significant difference between the groups that underwent laser hemorrhoidoplasty and those that underwent Milligan morgan laser hemorrhoidoplasty in terms of recovery time and ability to return to normal life following the operation. Following hemorrhoidoplasty, patients might expect a speedier recovery and return to their regular routines.

In support of Bresciano et al.,[7] Within the group that underwent laser hemorrhoidectomy, twenty patients (or 40% of the total) were able to resume their daily activities just one day following the procedure.

Also, agreed with Shabahang et al.,[8] Researchers that compared laser treatment with open hemorrhoidectomy found that all patients experienced full remission after 6 months, and no disease recurrence occurred during that time.

In the same line with Mohammed et al.,[5] observed that the laser group had a recovery period of 1.7±0.3 weeks and the MM group of 3.2±1.54 weeks, with a p-value of 0.042. Results demonstrated a statistically significant difference between the groups treated with Laser hemorrhoidectomy and those treated with Milligan-Morgan hemorrhoidectomy with respect to time to recuperation and return to normal life following surgery. Because of the shorter time it takes to recuperate and get back to normal after laser surgery, it was our chosen method.

When comparing the three groups' post-treatment complication distributions, laser hemorrhoidoplasty emerged as the clear winner in terms of both intraoperative and postoperative bleeding.

In agreement with Maloku et al.,[4] discovered that in the initial days following the intervention, a statistically significant 13% of patients in the LHP group and 77% of patients in the MM group experienced minor bleeding, with a p-value<0.0001. On day 7, there was a statistically significant difference in the occurrence of bleeding (10% in the LHP group and 33% in the MM group), with a p-value of less than 0.001.

As well, agreed with Elhefny et al.,[6] demonstrated the absence of significant intraoperative problems. Group B had an estimated intraoperative blood loss of 39±8.84 ml, compared to 30.83±8.2 ml in group A, with a p-value of less than 0.001. That means the laser hemorrhoidectomy group was significantly different from the milligan al hemorrhoidectomy group with respect to both intraoperative and postoperative hemorrhage. Therefore, we opted for laser hemorrhoidectomy.

According to Maloku et al.,[4] demonstrated that compared to the group treated with the open surgical procedure (MM), the LHP group displayed much less bleeding.

In terms of the distribution of symptoms in the conservative treatment group before and after

treatment, we found no statistically significant difference in bleeding, itching, or swelling, but a statistically significant difference in constipation and pain.

In supporting with Brusciano et al.,[7] 32 patients (or 60% of the total) reported post-defecatory bleeding on the first day following surgery, and 15 patients (or 30% of the total) on the third day after surgery; no patients, however, suffered from spontaneous bleeding following surgery. No bleeding incident has happened since the seventh day after surgery.

Also, agreed with Allan et al.,[9] those whose goal was to research the results of conservative treatment with hemorrhoidectomy for prolapsed thrombosed internal hemorrhoids found that swelling, discomfort, bleeding, and prolapse were preoperative symptoms, but these symptoms decreased following treatment.

4. Conclusion

In view of the result of the present study as well as recent published data in literature in the treatment of 3rd degree hemorrhoids, it can be suggested that compared to Milligan morgan hemorrhoidectomy and conservative treatment laser hemorrhoidoplasty shows better patient satisfaction, shorter treatment time, less complications, and early return to normal life.

Disclosure

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