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Comparison of Hemorrhoidectomy by Ligasure with Conventional Milligan Morgan's Hemorrhoidectomy

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Abstract

Hemorrhoidal disease is one of most common anorectal disease and surgical hemorrhoidectomy remains one of most common operation in general surgery. The aim of the present study is to compare between conventional Milligan-Morgan hemorrhoidectomy and ligasure hemorrhoidectomy in treating patients with 3rd and 4th degree hemorrhoids. This randomized control trial was conducted at Alfayhaa teaching hospital during 2016 to 2018. The 3rd and 4th degree hemorrhoid patients (n=60, age 16-70 years) were randomly divided into two groups based on the surgical procedure, i.e. ligasure hemorrhoidectomy (n=30) and conventional hemorrhoidectomy (n=30). In ligasure hemorrhoidectomy, operative time, pain score on the 1st operative day and 1st week, duration of wound healing were 12.2 ± 03, 4.1 ± 05, 5.3 ± 02min and 3.1 ± 02, respectively. While in the conventional hemorrhoidectomy, it was 23.3 ± 02, 6.2 ± 03, 2.1 ± 09min and 4.4 ± 07, respectively. In ligasure hemorrhoidectomy 15 patients didn't have blood loss, 10 patients had a mild blood loss and 5 patients had a moderate blood loss. While, in conventional hemorrhoidectomy all patients suffered from blood loss, *i.e.* 14 patients have mild blood loss and 11 patients have blood loss. In conventional hemorrhoidectomy postoperative bleeding, necrosis, residual disease and anal ____stenosis ___ were 19.2 ± 03 ($p<0.001$); 02.5 ± 01 ($p<0.01$); 08.9 ± 08 and 01.5 ± 01, respectively. While, in ligasure hemorrhoidectomy postoperative bleeding, necrosis and residual disease were reduced to 07.3 ± 07; 00.0 ± 00 and 04.9 ± 09, respectively. Anal _____stenosis ____ was found to be increased to 06.4 ± 06 as compared to the conventional hemorrhoidectomy. Ligasure hemorrhoidectomy is better than conventional hemorrhoidectomy in terms of less operative time,less intraoperative pain and less postoperative complication and earlier wound healing and return to daily work hence higher patient satisfaction.

Keywords: *Ligasure hemorrhoidectomy, conventional hemorrhoidectomy, postoperative complication, residual disease*

Introduction

The hemorrhoid is a common anorectal disease characterized by distal displacement or enlargement of anal cushion[1-3]. Abnormal destructive changes and dilited vascular channel in the supporting tissues in the anal cushion are reported by the various authors[4-5]. Ample of literature available on the association of the tissue inflammation and hyper perfusion state of anorectal region.

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Hemorrhoidal disease reported in approximately 5% of the general population, especially after age 40 years of age, due to normal anatomical component of anal canal and the treatment is indicated in symptomatic cases[6]. On the bases of hemorrhoids degree of prolapse and appearance, it can be graded in to four degrees[7]. They are known as Goligher's classification. IN the first-degree hemorrhoids (gradeI), the anal cushions are bleed but do not show any sign of prolapse. The second-degree hemorrhoids (grade II) include anal cushions prolapsation through the anus on straining however it reduce spontaneously. In the third-degree hemorrhoids (grade III), anal cushions prolapse through the anus on exertion or straining and it involve manual replacement into the anal canal. In the fourth-degree

hemorrhoids (grade IV), the formed prolapse remains out at all times and is irreducible. However, the variation in the 4th stages are also seen in many patients. Incarcerated internal hemorrhoids, elevated numbers of incarcerated, thrombosed with or without hemorrhoids involving circumferential rectal mucosal prolapse are a few variations observed among the patients[8]. In the preset study we focuased on the 3rd and 4th degree of hemorrhoids.

Many surgery options are available for the patients based on the hemorrhoids degree, age, complications etc[9-11]. The main and ultimate treatment for 3rd and 4th degree hemorrhoids is hemorrhoidectomy[12]. Traditional Milligan Morgan hemorrhoidectomy is open surgical procedure in which the hemorrhoid pedicle is ligated by transfixing suture. This may lead to postoperative complications, mostly pain, bleeding and wound infection[13]. Many surgeon believes that by avoiding vascular pedicle ligation, the chance of secondary bleeding can be decrease[9-13]. Because it may lead to ischemia and necrosis. Additionally, if sutures are applied deeply, then they can also cause firm scarring at anus later on. To avoid this problem, ligasure are used by the practitioner. In this surgery procedure, the transfix vascular pedicle of hemorrhoids are not used instead they seal them by Ligasure. The Ligasure vessel sealing system is a bipolar electro thermal device which seals blood vessels by a calculated arrangement of pressure and radio frequency. With is background, in the present study, we aim to compare between conventional Milligan-Morgan hemorrhoidectomy and ligasure hemorrhoidectomy in treating patients with 3rd and 4th degree hemorrhoids.

Material and Method

This randomized control clinical study was carried out at the Alfayhaa teaching hospital during a period from may 2017 to may 2018. The study enrolled 60 patients diagnosed with 3rd and 4th degree hemorrhoids. They are randomly divided into two groups i.e. ligasure hemorrhoidectomy treated patients (n=30) and conventional Milligan Morgan hemorrhoidectomy treated patients (n=30).

The inclusion criteria were patients above 16 year age with diagnosed 3rd and 4th degree hemorrhoid. Patients with previous anal surgery, anticoagulant therapy, immunosuppressed patients and under 16 years were excluded from the study. All patients were subjected to history taking, clinical examination and investigations, including complete blood count, coagulation profile, liver function tests, kidney function test, fasting blood sugar, ECG, anoscopy or sigmoidoscopy. Before the surgical procedure, cefalosporine (1gm) were given intra-venusly to the both groups.

Surgery procedure for ligasure hemorrhoidectomy

The hemorrhoidal complex is grasped by Allis clamp with artery forceps. So that skin elevation can be seen at the junction between hemorrhoid and peranal skin. The ligasure device was applied. The dissection was started in this plane, with sparing the sphincter in anal canal till the pedicle of hemorrhoid appear. The pedicle of hemorrhoid can be sealed twice to ensure it is devascularized and reduced postoperative bleeding. A similar procedure was done for 2nd ad 3rd hemorrhoids with skin bridges between them. The anal pack was used if needed.

Surgery procedure for conventional (Milligan-Morgan) hemorrhoidectomy

The anal retracter was introduced to visualize the surgical field. Allis artery forceps were placed on the external component at the three main sites. Traction on these prolapse the internal components, relevant two artery forceps were grasped in the palm of left hand and the index finger extended anally to define the triangle of exposure. The mayo scissors were used to inscised the skin. The external component was dissected off the underlying superficial external anal sphincter and separated the internal component from underlying internal anal sphincter, continually narrowing down the pedicle, and transfix and ligate the pedicle. The operation then proceed for the another two hemorrhoids. Hemostasis is checked and anal pack is used to ensure hemostasis.

Statistical Analysis

The data were represented as a mean and standard error. The statistical analysis was perform by one way analysis of variance (ANOVA).

Results

The Age of the patients ranged between 16 and 70 years old with a mean 38.9 years. Regarding Sex, male patients in the study were 20 representing 66.66%. Female patients were 10 representing 33.33% of patients

participated the study in the conventional group and male patients were 23 representing 76.66%, and female patients 07 representing 23.33% of patients in Ligasure group (Table 1).

Table 1. Gender vise variation of patients

	Conventional	**Ligasure**
Male	20 (66.66%)	23 (76.66%)
Female	10 (33.33%)	07 (23.33%)

Table 2 reveals features of hemorrhoids as compared between ligasure and conventional hemorrhoidectomy methods regarding operative time. In ligasure and conventional hemorrhoidectomy the operative time were 12.2 ± 03 and 23.3 ± 02 min. In ligasure and conventional hemorrhoidectomy, the pain score on the 1st operative day were 4.1 ± 05 and 6.2 ± 03. The pain score on 1st week postoperative were 5.3 ± 02 and 2.1 ± 09 min in ligasure and conventional hemorrhoidectomy. While, duration of wound healing were 3.1 ± 02 and 4.4 ± 07 in ligasure and conventional hemorrhoidectomy.

Table 2. Feature of ligation and conventional hemorrhoidectomy method

	Ligasure hemorrhoidectomy	**Conventional hemorrhoidectomy**	**p value**
Operative time (min)	12.2 ± 03	23.3 ± 02	0.001
Pain scores 1st day	4.1 ± 05	06.2 ± 03	--
Pain scores 1st week	05.3 ± 02	02.1 ± 09	--
Duration of wound healing	03.1 ± 02	04.4 ± 07	--

Table 3 shows the variation of intraoperative blood loss in both groups. In ligasure hemorrhoidectomy 15 patients didn't have blood loss, 10 patients had a mild blood loss and 5 patients had a moderate blood loss. While, in conventional hemorrhoidectomy all patients suffered from blood loss, *i.e.* 14 patients have mild blood loss and 11 patients have blood loss.

Table 3. Variation of blood lost during operation

	Ligasure hemorrhoidectomy	**Conventional hemorrhoidectomy**
No blood loss	15 (50.00%)	00 (00.00%)
Mild blood loss	10 (33.33%)	14 (63.33%)
Moderate blood loss	05 (16.66%)	11 (36.66%)

Table4 shows complications from hemorrhoidectomy in comparison between two surgery procedure. In conventional hemorrhoidectomy postoperative bleeding, necrosis, residual disease and anal ____stenosis ___ were 19.2 ± 03 ($p<0.001$); 02.5 ± 01 ($p<0.01$); 08.9 ± 08 and 01.5 ± 01, respectively. While, in ligasure hemorrhoidectomy postoperative bleeding, necrosis and residual disease were reduced to 07.3 ± 07; 00.0 ± 00 and 04.9 ± 09, respectively. Anal _____stenosis _____ was found to be increased to 06.4 ± 06 as compared to the conventional hemorrhoidectomy.

Table 4. Complications

Complication	Ligasure hemorrhoidectomy	Conventional hemorrhoidectomy	P valve
Bleeding	07.3 ± 07	19.2 ± 03	0.001
Necrosis	00.0 ± 00	02.5 ± 01	0.01
Residual disease	04.9 ± 09	08.9 ± 08	--
Anal stenosis	06.4 ± 06	01.5 ± 01	--

Discussion

Now a day also conventional hemorrhoidectomy was recommended to many patients showing irreducible and symptomatic piles[14]. However, many reports are available about the comparision of conventional hemorrhoidectomy and recent more advance surgery procedure[14-18]. The comparison of conventional hemorrhoidectomy with ligasure hemorrhoidectomy were also reported by many researchers[16-18].

In the randomized trials on the 850 patients, significant improvement in wound healing, postoperative pain, and time off work was reported with comparable complications and postoperative bleeding in both ligasure and conventional hemorrhoidectomy[17]. However, in the present study no significance improvement was observed in the wound healing as compared to conventional hemorrhoidectomy. Kraemer et al.[19] reported Ligasure haemorrhoidopexy reduces in the postoperative pain and slide improvement in radiofrequency in 4th stage piles patients as compared to stapled haemorrhoidopexy. Our study is accordance with this report.

Mastakov et al.[18] reported that the ligature hemorrhoidectomy was a more effective treatment than other hemorrhoidectomy surgery procedure. The study was based on the eleven trials of 1046 patients and their large meta-analysis. The complication incidence was also reported to be very low[18]. In the present study, ligature hemorrhoidectomy found to be reduce operative time, postoperative pain in 1st day and 1st week as compared to hemorrhoidectomy surgery procedure.

In the prospective multicentric randomized trial (n=273), LigaSure treatment showed significant improvement in faster return to work, shorter operating time with reduction in postoperative pain. However, complication occurrence and postoperative bleeding was non-significant differs[16]. About 50% patients did not show any blood loss after surgery. The data is accordance with the previous reports.

Conclusion

Ligasure hemorrhoidectomy is found to be an effective method as compared to conventional hemorrhoidectomy in terms of less intraoperative pain and operative time, and less postoperative complication and earlier wound healing with the maximum frequency of return to daily work.

Ethical Clearance: Ethical clearance taken from Al Fayhaa teaching hospital.

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Conflict of Interest: Nil

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