ORIGINAL ARTICLE

Complications of Ligasure^{tm} Haemorrhoidectomy

MUHAMMAD KHURRAM ZIA[1], YABINDA SEHRISH[2], SAJILA BANO[3], ZAKIA NEHAL[4], FATIMA ABBASI[5], ASIF QURESHI[6]
[1]*Associate Professor of Surgery- Liaquat College of Medicine and Dentistry / Darul Sehat Hospital. Karachi*
[2]*Assistant Professor of Surgery- Liaquat College of Medicine and Dentistry / Darul Sehat Hospital, Karachi*
[3]*Squardon Leader Consultant Surgeon, Pakistan Airforce Base Masroor Hospital, Karachi*
[4]*Senior Registrar Department of Surgery-Liaquat College of Medicine and Dentistry / Darul Sehat hospital, Karachi*
[5]*Consultant General Surgeon- Holy Family hospital Karachi*
[6]*Professor & Head of Department of Surgery- Liaquat College of Medicine and Dentistry / Darul Sehat Hospital, Karachi*
Corresponding Author: Dr. Muhammad Khurram Zia, Email: drkhurramzia@hotmail.com, Cell No. +92321-2993115

ABSTRACT

Objective: The aim of this study is to determine the complications of ligaSure^{TM} haemorrhoidectomy.
Study Design: Prospective descriptive study.
Place and Duration of Study: The study was conducted at department of Surgery Darul Sehat Hospital, Karachi for duration of one year from June 2017 to May 2018.
Materials and Methods: 160 patients more than 14 years of age having grade III and IV haemorrhoids admitted through OPD were included in the study. The patients with recurrent disease, associated perianal pathology like anal stenosis, fistula in ano e.t.c, deranged bleeding profile and patients with positive hepatitis B or C virology were excluded. All the patients underwent ligaSure^{TM} haemorrhoidectomy. Any complication during surgery or postoperatively was noted. The data was collected on a specified proforma and was analyzed by using SPSS 24 software.
Results: 62.5% were males and 37.5% were females. Their mean age was being 43$\pm$5 years. The mean pain score on visual analog scale was 5.4. The next most common complication was bleeding (8.75%) followed by anal spasm (5%), and urinary retention (4.4%). Only 4 patients had wound infection which was managed conservatively by antibiotics and sitz bath. There was no incontinence and recurrences observed in the subsequent follow up after six months.
Conclusion: LigaSure™ hemorrhoidectomy is not only safe and effective but also has less blood loss, postoperative pain and complications. Technically it is much simpler because suturing is not required and hemostasis is easy to achieve.
Key Words; LigaSure^{TM} haemorrhoidectomy, Complications, Haemorrhoidectomy.

INTRODUCTION

The anal canal is approximately 1.5 inches (4 cm) in length and goes down from the rectal ampoule to the anus [1]. The levatores ani and anal sphincters keep their lateral walls in position[1]. The mucus membrane at the upper half of the anal channel is derived from the endoderm of hindgut and the nervous system is derived from self-sufficiency hypogastric plexuses. Mucovascular membrane of the lower half of the anal canal comes from the ectoderm of the proctode, and is thus sensitive to pain, temperature, touch and pressure, the nerve supply being the lower rectal nerve. [1] The anus or lower channel is in the midline, and there is the ischiorectal fossa on both sides, and the lower rectal (hemorrhoidal) nerve is supplied to the skin around anus. [1]. The upper anal artery's blood supply is derived from the superior rectal artery (derived from the lower mesenteric artery), while the lower anal artery supplies the bottom rectal artery [2]. In similar fashion, the anal veins are distributed to the arterial supply; the upper half of the anal channel is drained from the superior rectum veins, tributaries of the bottom mesenteric vein, and thus, the portomesenteric venous system; and the middle rectal veins that dry up into the inner iliac veins. A location of portosystematic anastomosis is followed by the venous drainage[2]. The rectal (superior portal) and the central and lower rectal (systemic) veins are produced at the anal canal[2]. The word haemorrhoids comes from the Greek word haima (blue), mean bleeding and pile derived from the latin word (pila), meaning ball [4]. Haemorrhoid can be divided into internal, external and inter-external according to its connection with the anal orifice [5]. Hemorrhoids are four degrees,
The prolapse – just bleed, no prolapsed, the second grade – but spontaneous reduction;
• Tertiary degree – prolapse and must be decreased manually; 4th grade – prolapsed permanently [6] os Hemorrhoid's clinical characteristics are, Blueberry Or symptomatic anal cushions are piles, The Intra-abdominal pressure is more normal Elevated, for example in obesity, constipation and pregnancy, There are classical occurrences at 3, 7 and 11 pm lithotomy places with the patient [6] The Hemorrhoid Symptoms, Sparkling crimson, bleeding painless, Discharge of mucus, Overturned, Prolapsed pain alone [6]

Because of its ability to grip, seal and blunt dissection the electrosurgic unit in LigaSure is multi-functional.[7-9] In fact, bipolar diathermy is modified, which works by combining pressure and radiation, screens blood vessels up to a diameter of 7 mm and provides energy suited to tissue impedances by thermal injuries of only 2 mm over the surgical setting. The restricted thermal dispersion helps the doctor to conduct a relatively unbluttered operation and to reduce the anal spasm causing the majority of pain following heamorrhoidectomy. Furthermore, when the tissue sealing is complete, the LigaSure electrosurgical device stops supplying energy. [9] LigaSure hemorrhoidectomy is also considered superior to traditional hemorrhoidectomy since it was explicitly developed for use in a narrow surgical field that requires delicate and accurate vision and dissection.

PATIENTS AND METHODS

This descriptive study was conducted in the department of Surgery Darul Sehat Hospital, Karachi for duration of one year from June 2017 to May 2018. Total 60 patients, more than 14 years of age having grade III and IV haemorrhoids admitted through OPD were included in the study. The patients with recurrent disease, associated perianal pathology like anal stenosis, fistula in ano e.t.c, deranged bleeding profile and patients with positive hepatitis B or C virology were excluded. Patients were admitted one day before surgery for preoperative workup for Blood CP, Blood Sugar Random, Liver Function Tests, Bleeding Profile, Renal Function Tests and Hepatitis B, C and HIV. Informed consents were taken from patients and they were explained about the procedure. All the patients received either general anaesthesia or spinal anaesthesia and operated in lithotomy position. After manual dilatation of the anal sphincter, the external and internal parts of the haemorrhoids were dissected and lifted from the anal sphincter up to the base of the haemorrhoidal pedicle. The pedicle then sealed with the ligaSure™ and the excess tissue removed. The haemostasis achieved either with ligasure or monopolar diathermy if required. No sutures were applied as the Ligasure device also achieved mucosal fusion. Where required a stich with vicryl was only applied for achieving haemostasis. All the patients were given antibiotics, analgesics, laxatives, local anaesthetic gel and encouraged to have sitz bath postoperatively. Any complication during surgery or postoperatively was noted. The severity of the pain postoperatively was recorded on visual analog scale from 0 – 10 cm from immediately postoperative period to one week on daily basis and mean score was calculated for every patients. Zero was labelled as No pain, 1-3 as mild pain, 4 -6 as moderate pain and 7-10 as severe pain. Mostly patients were discharged within three days after surgery except those developed any complication. Follow up of the patients were done in surgical OPD at one week, three weeks, six weeks and six months intervals to see any complication related to ligasure haemorrhoidectomy. The data was collected on a specified proforma and was analyzed by using SPSS 24.0 software.

RESULTS

A total of one hundred and sixty patients were studied. The mean age was 43±5 years. The majority 60 (37.5%) was lying in the fifth decade of life. The male patients (62.5%) were more as compared to female patients (37.5%). The mean operative time for ligaSure™ haemorrhoidectomy was 22.4 min. The mean postoperative hospital stay was 4.2 days. All the patients have pain with varying degree managed with analgesics. The assessment of pain during postoperative hospital stay was done on mean visual analogue scale ranging from 0 – 10cm which was 5.4. The next most common complication was peroperative bleeding which was 8.75% and required haemostatic ligature. Eight patients (5%) had anal spasm postoperatively and all were managed conservatively with sitz bath, analgesics and 2% glyceryletrinitrate ointment. Seven (4.4%) patients had urinary retention on the first postoperative day which was managed by temporary foley's catheterization. Only four patients had wound infection which was managed conservatively by antibiotics and sitz bath. There was no incontinence and recurrences observed in the subsequent follow up after six months.

Table 1: Sex Distribution N= 160

S.No	Sex	No. of Patients	%age
1	Male	100	62.5
2	Female	60	32.5
	Total	160	100

Table 2: Age Distribution n=144

Age Distribution In years	No. of Patients	% age
< 30	7	4.38
31 – 40	50	31.25
41 – 50	60	37.5
51 - 60	35	21.9
>60	8	5
Total	160	100

Table 3: Complications

S. No.	Complication	No. of patients	% age
1	Bleeding	14	8.75
2	Anal spasm/stenosis	8	5
3	Urinary retention	7	4.4
4	Infection	4	2.5
5	Incontinence	0	0
6	Recurrence	0	0

DISCUSSION

Haemorrhoids are one of the most common cause of bleeding per rectum in our patients presented in the out patients department. Most of the patients with complaint of bleeding per rectum presents very late in surgical department in our society and diagnosed as having grade III or IV haemorrhoids because they remain reluctant to present themselves to the doctor in the initial stage due to social hesitation or getting treatment from "hakims". Many treatment options are in practice like conservative medical treatment, injection sclerotherapy, band ligation, cryotherapy and surgical haemorrhoidectomy[12]. Surgical haemorrhoidectmy is still the gold standard treatment for symptomatic haemorrhoids. But the complications especially bleeding and postoperative pain associated with Milligan and Morgan (open haemorrhoidectomy) and Ferguson (closed haemorrhoidectomy) are still a headache for the colorectal surgeon and they always search newer techniques which are safe and better for the patients[13]. In this context, different techniques and equipment have been developed to deal with the bleeding and postoperative pain which includes the use of cautery for dissection, perioperative use of lactulose, metronidazole, and the addition of lateral internal sphincterotomy or the intraoperative injection of botulinum neurotoxin[14]. Stapled haemorrhoidectomy was introduced in the recent past but has not gained popularity because of the high cost of the stapler and the demand of the expertise in the use of the device. Now a days vessel sealing equipment, a type of bipolar diathermy, known as LigaSure™ is available in most of hospitals for General Surgery. It allows complete sealing of the blood vessel up to 7mm safely therefore bleeding has significantly reduced. There is also minimal lateral thermal spread not more than 2mm. Its use in the haemorrhoidectomy is becoming popular now a days as it is

easy to use and its application results in a discrete line of coagulation that allows bloodless haemorrhoid excision, making it an ideal instrument for haemorrhoidectomy[15,16].

Several clinical trials have been conducted to reveal its true usefulness, in regard to establish the complications and recurrence rate. However, with the information till to date we have, this procedure is considered safe with less bleeding and postoperative pain[6,7,17].

One hundred and sixty patients were studied. Mean age of the patients was 43±5 years. Majority was males as compared to females. The mean hospital stay was 4.2 days. These findings were similar with most of the studies [17,18]. The mean operative time was 22.4 min which was little higher as compared to most national and international studies. The most likely cause for higher operative time might be the learning curve of the surgeons to use the ligaSure™ device.

The most common complication was postoperative pain. In one of the recent studies, Khadem TJ, found postoperative pain in 26.4% patients although he did not describe the severity of the pain. However in other studies, researchers have described the severity of postoperative pain on visual analog scale. Bahena JA showed mean VAS 4.8 in his study.[3] In our study, mean VAS was 5.4 which is similar with most of the studies[18,19].

Haemorrhoidectomy is also associated with bleeding which bothers the surgeons. Traditional scissor dissection is associated with significant peroperative bleeding. The use of diathermy dissection has reduced the bleeding significantly but there is still a need of ligature which sometimes slips causing postoperative bleeding. However stapled haemorrhoidectomy has overcome these problems but its high cost has reduced its advantage[6]. On the other hand the ligaSure™ not only sealed the vessel but also restore mucosa[20]. Therefore it results not only reduced bleeding but also there is no need of suture. We require suturing in 8.75% patients to secure the bleeding even after the use of ligaSure™. In these cases either vessel size was more than 7mm or they were having cluster of vessels.

Anal spasm was found in 5% patients in early postoperative period which was managed conservatively with sitz bath lignocaine gel, stool softner and analgesics. Urinary retention was found 4.4% patients which was managed with temporary foley's catheterization. Only 2.5% patients had wound infection which was managed conservatively. However incontinence and recurrence were not found in any patient followed up to six months after surgery. These findings are similar with most national and international studies[17,20].

CONCLUSION

LigaSure™ hemorrhoidectomy is safe and easy to use and it is a closed hemorrhoidectomy technique which does not require suture but it is dependent on a modified bipolar diathermy unit to achieve tissue and vessel sealing. It is not only safe and effective but also has less blood loss, postoperative pain and complications. Technically it is much simpler because suturing is not required and hemostasis is easy to achieve.

REFERENCE

1. Richrd S Snell, The perineum, chapter 8, clinical anatomy by regions, 8th edition, Wolters Kluwer, Lippincott Williams & wikins, 2007, 388.
2. . Omar Faiz, David Moffat. The lower gastrointestinal tract, chapter 17, Anatomy at Glance, 1st ed, Blackwell Science LTD, British, 2002, 36-44.
3. Peter J Lunniess chapter 69, the anus and anal canal, Bailey and Loves, short practice of surgery, 25th edition, CRC Press,Taylor and Francis Group, London, 2008, 1242.
4. Sriram Bhat M. rectum and anal canal, chapter 25, SRBS, Manual of surgery, 4th edition, Jaype brothers medical publishers (p) LTD, Newdelhy, 2013, 1039
5. Herald Ellis, Sir Roy Calne, Christopher Watson. the rectum and anal canal, chapter 26, General surgey, lecture notes, 12th edition, Wiley-Blackwell, 2010, 219
6. Peter J. Lunniess, Karen Nugent, chapter 73, the anus and anal canal, Bailey and Loves, short practice of surgery, 25th edition, CRC Press,Taylor and Francis Group, London, 2008, 1252.
7. Sayfan J, Becker A, Koltun L. Sutureless closed hemorrhoidectomy: A new technique. Ann Surg 2001;234:21-4.
8. Milito G, Gargiani M, Cortese F. Randomised trial comparing ligaSure haemorrhoidectomy with the diathermy dissection operation. Tech Coloproctol 2002;6:171-5.
9. Jayne DG, Botterill I, Ambrose NS, Brennan TG, Guillou PJ, O'Riordain DS,*et al*. Randomized clinical trial of ligasure versus conventional diathermy for day-case haemorrhoidectomy. Br J Surg 2002;89:428-32.
10. Chung YC, Wu HJ. Clinical experience of sutureless closed hemorrhoidectomy with ligaSure. Dis Colon Rectum 2003;46:87-92