

# Patients' Satisfaction after Stapled Hemorrhoidectomy Versus Doppler Guided Hemorrhoidal Artery Ligation

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## ABSTRACT

**Objective:** Assessment of the patient's satisfaction undergoing treatment for haemorrhoids, after stapled haemorrhoidectomy and haemorrhoidal artery ligation methods of surgery at Khawaja Muhammad Safdar Medical College, Sialkot, Pakistan.

**Study Design:** Prospective and analytic study.

**Place and Duration of study:** This study was conducted at the Department of Surgery, Khawaja Muhammad Safdar Medical College, Sialkot from from December 2012 to June 2015.

**Materials and Methods:** All patients presenting in surgical out patients department above 18 years with third degree haemorrhoids were included in the study. Data of 82 patients (stapled haemorrhoidectomy n=55 and haemorrhoidal artery ligation n=27) was collected from December 2012 to November 2015. Patients were distributed in two groups depending upon the surgical procedures carried out. Full detailed history, examination, and investigations were performed. Patients with grade III hemorrhoids underwent RAK procedure (Recto Anal Repair) i.e. Doppler guided haemorrhoidal artery ligation (DG-HAL) combined with restoration of prolapsed hemorrhoids to their anatomical position with longitudinal sutures. Results of treatment were assessed by regular follow up. Recording of variables and feedback of the patients with minimum 3 months follow up, was made and analysed.

**Results:** Out of 82 patients included in our study, Male patients were more in number in our study while 43 years came out to be, of the mean age. Something coming out from the anal canal, painful evacuation of bowels, bleeding per rectum and constipation are the chief presenting complaints.

**Conclusion:** Generally, patients with piles except having severe prolapsed haemorrhoids had postoperative pain, lesser complications and acceptable results in long term can be achieved, in patients undergoing Doppler Guided Haemorrhoid Artery Ligation and Recto Anal Repair. Haemorrhoid artery ligation is a procedure associated with much less pain, in comparison to the stapled haemorrhoidectomy and patients can resume normal routine job, early. Long-term complications still require to be seen and assessed by studies with longer follow up. A lot depends on treating surgeon, his experience, skill and acumen.

**Keywords:** Hemorrhoids, Ligation, RAK (Recto-anal repair), DG-HAL (Doppler guided Haemorrhoidal artery ligation), Stapled Haemorrhoidectomy.

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## INTRODUCTION

Haemorrhoids is one of the commonest illnesses making up major work load in the surgical set up<sup>1</sup>. The pathophysiology of this condition is uncertain. Majority of the population elder than 50 years are likely to suffer from haemorrhoids of some severity<sup>2</sup>. Almost all human beings will get this disease minimum once

during their life<sup>3</sup>. Classifying haemorrhoids: Stage I Haemorrhoids presenting with bleeding only, Stage II Haemorrhoids that prolapse and reduce at own, Stage III Haemorrhoids which prolapse and require reduction and Stage IV Prolapsed haemorrhoids that cannot be reduced. Depending upon presenting complaints, varied methods of treatment like Baron's band ligation, Cryotherapy, Electro cautery and Injection of Sclerosing Agents and ultimately Surgery. Surgery remains the acceptable final treatment of grade III piles<sup>4</sup>. Each method of haemorrhoidectomy has its merits and demerits as well as method-specific complications, including anal canal strictures, sensory loss, and sphincter damage resulting in incontinence<sup>5</sup>. Conventional open and closed haemorrhoidectomy is being replaced by newer techniques with less complications and recurrence is almost negligible, but the patients have painful defecation after surgery and delayed return to normal daily activities<sup>6</sup>. Invention and

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use of circular stapling gun for treating haemorrhoids has good results as regards to postoperative pain, lesser hospital stay and resuming daily routine<sup>7</sup>.

Haemorrhoidal artery ligation is also gaining popularity with even more advantages but requires specialised equipment of Doppler sensors to exactly locate the site and depth of feeding arteries<sup>8,9</sup>. First introduced by Morinaga et al. in 90s<sup>7</sup>, is a procedure that ligates and contracts haemorrhoid tissue after indicating the upper rectal artery branch supplying the haemorrhoid with the help of Doppler signal and monitor<sup>10</sup>.

International studies are there analysing merits and demerits of these methods of treatment but not much work has been done in Pakistan. The present study was a prospective analysis of the outcome of haemorrhoidectomies by stapled method and Doppler guided haemorrhoidal artery ligation, in Department of Surgery, Allama Iqbal Memorial Teaching Hospital affiliated with Government Khawaja Muhammad Safdar Medical College, Sialkot. A comparison of stapled haemorrhoidectomy with HAL and RAR (recto anal repair) as regards duration of surgery, blood loss, pain after the procedure, early and delayed morbidity, hospital stay, time required to return to normal activities, and the cost of the surgical procedure.

## MATERIALS AND METHODS

Prospective study based on a treatment of 82 Patients who were followed up for at least 3 months. Amongst these 55 patients opted for haemorrhoidectomy by stapled method and 27 patients underwent Haemorrhoidal artery ligation with Recto Anal Repair. This analysis was not randomized, details of the procedures were told to the patients and choice of operating technique done by the patients according to affordability and wishes. Preoperative antibiotics were given to all the patients. This analysis was not randomized, details of the procedures were told to the patients and choice of operating technique done by the patients according to affordability and wishes. Preoperative antibiotics were given to all the patients.

All the surgeries were done using general and spinal anaesthesia in lithotomy position. A specialized Anoscope with Doppler sensor was used and introduced to anal canal along with a specially designed sleeve. The sensor is required to be placed about 3-5 cm from upper dentate line to indicate the rectal arteries. The exact site and depth of the arteries were confirmed using Doppler ultrasound and displayed on the monitor. Then a double stitch is applied with Vicryl 2/0 at the identified spot. After application of ligature, it was checked by loss of signals on Doppler sensor and the knot tightened using a knot pusher.

Postoperative pain was assessed by grading as no pain, pain requiring no treatment, treatment with oral analgesics and treatment with intravenous analgesia. Recurrence of disease, morbidity data, Duration of hospitalization, pain in postoperative period, duration of

operating time and time taken for resuming daily activities was recorded. Every patient was assessed in person. The assessment of result was recorded on a proforma, inclusive of symptomatology as pain and discomfort, itching, bleeding per rectum, urgency and incontinence and patient's opinion of outcome grading as poor, fair, good or excellent.

The patients having grade III haemorrhoids were included. Symptomatic haemorrhoidal disease with prolapsing haemorrhoids, reducible manually and no history of faecal incontinence prior to enrolment. Patients with recurrent haemorrhoids, diabetes, grade I and II as well as having less than 3 months follow up were excluded from the study. Similarly, Patients with co-existing medical problems, perianal sepsis, inflammatory bowel disease, colorectal tumours, pre-existing sphincter injury; Pregnancy and patients unfit for general or spinal anaesthesia were excluded as well as patients currently taking certain medication like antiplatelet drugs.

The results of the treatment in this study was shown as mean  $\pm$  standard deviation. The analysis of statistics was done on programme of SPSS version 21.

## RESULTS

In time period of 2 years and 11 months, the patients of 3<sup>rd</sup> degree piles with varied presentations were admitted and operated: with conventional open and closed haemorrhoidectomy in surgical department of Allama Iqbal Memorial Teaching Hospital affiliated with Khawaja Muhammad Safdar Medical College Sialkot, Pakistan. Total of 779 haemorrhoidectomies were carried out, of which 102 patients opted for new techniques. Only 82 patients fulfilled the inclusion criteria of this study as regards grade III and follow up after treatment. The general data of our patients in the study is shown in Table I.

**Table No.I: General data (n=82)**

Age	20-40 years: 26(31.70%) 40-60 years: 48(58.53%) >60 years: 8(9.75%)
Sex (m : f)	(59:23) (70.8%:29.2%)
Presenting complaints	Bleeding 42(64.6%) Something coming out of anus: 21(32.3%) Painful defecation: 18 (27.7%) Constipation: 6(9.2%) Perianal itching: 11(16.9%) Weakness: 4 (6.2%)
Degree of haemorrhoids	3 <sup>rd</sup> degree- 82 (100%)
Stapled haemorrhoidectomy	55 (69.2%)
Haemorrhoidal artery Ligation	27 (30.8%)

The differential data collected in the two groups is highlighted in Table 2.

**Table No.2: Morbidity data**

		Stapled Hemorrhoidectomy group (n=55)(100%)	Hemorrhoidal artery ligation group (n=27) (100%)
Operating time		35 – 90 mins ( mean 51 mins)	35 – 65 mins( mean 39 mins)
Postoperative pain	No pain	19(34.54%)	12(44.44 %)
	Pain but no treatment	15(27.27%)	8(29.62 %)
	Pain requiring oral analgesia	16(29.09%)	5(18.5%)
	Pain requiring intravenous analgesia	5(9.09%)	2(7.40%)
First defecation after surgery		Average time 18 hrs	Average time 16 hrs
Early complications	Urine retention	3(5.45%)	0
	Secondary bleeding	2(3.63%)	1(3.70%)
	Incontinence	1(1.81%)	0
	Wound infection	5(9.09%)	1(3.70%)
	Others	0	0
Late complications	Anal stenosis	0	0
	Anal incontinence	1(1.81%)	0
	Stricture	0	0
	Recurrence	4(7.27%)	1(3.70%)
	Others	0	0

The Recto Anal Repair procedure was performed in 35 minutes time (25 – 75 minutes) calculated from induction of anaesthesia and shifting back to surgical postoperative ward from the operation theatre. On average 5, (4 – 8) ligatures / number of Sensored arteries were done for HAL, the commonest site being 3 and 11 o’ clock position in supine patient. Recurrence of clinical complaints were bleeding in 6 (7.31%) patients, itching in 5 (4.1%) and pain in (3.3%). Complications of haemorrhoidectomy were urgency of stools in 2(3.65%), incontinence to flatus 2(3.65%) and persistent pain 1(1.81%).

For assessment of patient’s satisfaction, following parameters were recorded. Table 3.

One of the 27 patients (3%), 73-year-old male, reported occasional incontinence problems at the follow up, Check-up 3 months postoperative ( incontinence to flatus, off and on soiling of undergarments ) having complaints started 30 days after operation.

During the follow up one year after Recto Anal Repair, there was one new patient of prolapsed haemorrhoids i.e. recurrence. Not a single case of persistent bleeding per rectum was reported and patient’s opinion of satisfaction assessment questionnaire came out to be excellent in majority 95%, in stapled group and 98% in HAL group.

**Table No.3: Patients parameters**

	Stapled Hemorrhoidectomy group	Hemorrhoidal artery ligation group
Expenses of Surgery	37000/=( ± 7000 )	42000/=( ± 9000 )
Hospital stay	2.5 days	1.5 days
Return to work	4-7 days( mean 5.3)	2-5 days( mean 3.1days)
Recommendation for surgery for recurrence and for other patients with same complaints	95%	98%

**DISCUSSION**

Most of our patients were in the group ranging from 41-60 years while above 60 years were less. Reason being that older age group is still convinced of conventional techniques while the age group of 41-60 years because of better communication and access to modern technologies could easily be counselled for treatment and expenses to be borne.

Our patients were mostly male as expected but too less number of female patients in our study can be explained on local cultural and religious grounds; disliking of female patients to be treated by male surgeons.

Operating time in DG HAL group is relatively less as compared to SH group as more dissection is involved. However this was not a major factor for patients’ satisfaction

The time of surgery was quite short in the method of DG HAL patients (mean 38.75 minutes) versus the stapling technique i.e. (mean 50.75 minutes) in our study.

Bickchandani et al.<sup>11</sup>, in his study Comparison of Open Haemorrhoidectomy with stapling method published the finding of lesser blood loss and shorter duration of operation time in Stapled Haemorrhoidectomy. Other studies by Graviet al.<sup>12</sup> and Mehigan et al.<sup>13</sup> came out with similar findings. The problem of pain in SH (Stapled Haemorrhoidectomy) group was more in this procedure.

Hospital stay in our study was on average remained 3.5 ±1.5 days in the two groups which was comparable to the studies of Bikhchandani et al.<sup>11</sup>, and Shalaby et al.<sup>14</sup> The patient’s main concern was early return to normal work without complications, and that was 4-7 days and 7-12 days for stapled haemorrhoidectomy and

haemorrhoidal artery ligation respectively. These findings were not much different as shown in the above mentioned studies.

In injury of coming back to activities of day to day life; Mean value,  $2.3 \pm 2.0$  days following operation. Cost because of equipment involved in HAL and its disposable sensors, the expense borne by the patients in HAL group is relatively high that is average PKR 42000/- while PKR 37000/- in Stapled haemorrhoidectomy. These can be compared with other studies which show the cost in their local currencies.

The judgement by the patients about their surgical outcome was declared, poor in 6% (n=5), fair in 5% (n=4), good in 11% (n=9) and excellent by 79.4% (n=64).

Regarding the inquiry for opting surgery for second time; the reply was "yes" in 94.841% in stapled group and 98.02% in HAL group; similarly recommendation of the same procedure for other patients having same disease.

Retropneumoperitoneum and pneumomediastinum which has been reported in some studies and having grave effects were not encountered in our patients. Major postoperative complications like, sepsis, perforation of rectum or Fournier's gangrene were not encountered in our patients. Recent onset pain in Anorectum was reported by 2 patients. Reason being the purse string suture located near the dentate line, thus touching the sensible Anoderm, might be a reasonable explanation for anal pain. Gencosmanoglu et al.<sup>15</sup> and Carapeti et al.<sup>16</sup> i.e., had results which are comparable to our patients. You and Colleagues<sup>16</sup> showed that the pain after surgery was reportedly less in patients with closed haemorrhoidectomy. Arbman et al. did not find any difference among the results of two methods of haemorrhoidectomy. Post-operative Complications like acute intestinal obstruction, rectal perforation or rectovaginal fistula after stapling method reported in literature were not encountered in our study<sup>13,14</sup>. These complications happened due to inadequate experience and can be overcome once the learning of the technique is matured. We were fortunate for not having such complications.

In the stapling method group, one patient had recurrence of haemorrhoids and one patient had incontinence to flatus. A long-term follow-up study by Ganiot et al.<sup>17</sup> in his study has shown no differences between the outcome of both the surgical approaches. While, Van de Stadt et al. found a higher incidence of recurrence in prolapse after haemorrhoidectomy by stapling technique.

In contrast, Van de Stadt et al.<sup>18</sup> revealed a higher risk of re prolapsing piles requiring surgery after stapled Anopexy.

Skin tags after surgery were found in 13% (n=11) of the patients.

Smyth et al. found incidence of residual skin tags in 45% of their patients after stapled technique. Most of the patients were completely symptom free and no further procedure was required. Our patients in the study were not at all concerned about these tags.

The early complications were minor. Cheetham et al.<sup>20</sup>, showed 31% patients to have in their study of stapled haemorrhoidectomy, found 31% of patients to have faecal incontinence of minor grade and Postoperative pain persisting for 15 months. Reportedly the cause was not defined speculating that incorporation of muscle in the doughnut might be because of close placement of purse string suture to dentate line causing sensitive skin and muscle impingement.

Studies by Bickchandani et al.<sup>11</sup>, Shalaby et al.<sup>14</sup> and Mehigan et al.<sup>13</sup> showed almost same complications in open and stapled haemorrhoidectomy. Molloy and Kinsmore<sup>21</sup> highlighted a patient of retroperitoneal sepsis following stapling procedure and suggest routine use of antibiotic prophylaxis. All our patients had prophylactic antibiotics and no sepsis was reported.

Mean ligations of haemorrhoidal artery and Recto Anal Repair shown were 6 times. Duration of surgical procedure came to be mean 35 minutes. Almost similar operating times and number of times the arteries ligated.

Similarly, in other studies by Senagore AJ et al.<sup>22</sup> and Nisar PJ<sup>23</sup> et al, Mean number of ligations were 5-10. This number was lesser to the number of Recto Anal Repairs done in this study.

## CONCLUSION

The circular stapling technique offers a much less painful haemorrhoidectomy and is associated with an earlier return to normal life. Stapling method of hemorrhoidectomy is a new and reliable surgical technique for treating grade III and grade IV hemorrhoids. Patients have less postoperative pain, short hospital stay, little time away from routine life, morbidity similar to the conventional surgery, and patients having better satisfaction having no perianal wound. Hemorrhoidal artery ligation under Doppler control is a new technique, its cost remains relatively high in our setting which limit the availability of this technology to the public. However, more trials with longer follow up are essential to study any long-term complications.

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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