Research Article

Comparison between conventional haemorrhoidectomy and stapler haemorrhoidopexy

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ABSTRACT

Background: To make comparison between Stapled haemorrhoidopexy and conventional haemorrhoidectomy in terms of operating time, postoperative pain and bleeding and other complications, hospital stay and time to return to work.

Methods: It is prospective study including 45 patients divided into two groups, first group consists of 25 patients of having conventional (open and closed) haemorrhoidectomy and other group consists of 20 patients having stapler haemorrhoidopexy carried out in Gandhi medical college associated Hamidia Hospital, Bhopal, Madhya Pradesh, India.

Results: The duration of surgery was 45 minutes in conventional group and 40 minutes for stapler haemorrhoidectomy. The average duration of hospital stay for the stapled group was 3 days and for the conventional group it was 6 days. The average time to return to work in the stapled group was 10 days as against 20 days in the conventional group. There is considerable decrease in pain in stapler group both in immediate post-operative and during follow up in comparison to conventional group. There is less complains of bleeding episodes in stapler group having nearly half of the patients having bleeding episodes in comparison to conventional group. There is no significant difference in recurrence rate between two groups.

Conclusions: We conclude that stapled haemorrhoidopexy is associated with less postoperative pain and morbidity than conventional techniques. Staplerhaemorrhoidopexy has decreased operating time, hospital stay and duration of return to work as compared to conventional haemorrhoidectomy. There is no significant difference found in terms of recurrence in both the procedures. So stapler haemorrhoidopexy is better procedure in treatment of grade II and grade III haemorrhoid in comparison to conventional haemorrhoidectomy.

Keywords: Open haemorrhoidectomy, Closed haemorrhoidectomy, Stapler haemorrhoidopexy

INTRODUCTION

Hemorrhoids are normal component of the anal canal and are compose predominantly of vascular tissue supported by smooth muscle and connective tissue. It functions as a compressible lining allows the anus to close completely. They become symptomatic through bleeding or prolapsed. Gollinger classified haemorrhoids into four grades.¹ At least 50% of the people over the age of fifty

have some degree of haemorrhoids formation. First and second degree haemorrhoids are generally treated by changing bowel habits, diet and lifestyles and by using stool softeners or laxatives. For Second degree haemorrhoids injection sclerotherapy, rubber band ligation or infrared coagulation is also useful. Surgical haemorrhoidectomy is usually the treatment of choice for second and third degree haemorrhoids. It is used mainly for prolapsed second degree haemorrhoids with whole

circumferential involvement and not responded to other non-surgical interventions. Surgical haemorrhoidectomy is usually performed by the milligan-morgan (open) or ferguson (closed) procedure. The milligan-morgan procedure involves dissection of hemorrhoid and ligation of vascular pedicle and left open to heal naturally. Ferguson procedure is a modified version of the open technique involves wound closure with continuous suture to promote healing.² Postoperative complications-short term being pain, urinary retention, bleeding and perineal sepsis while long term is anal fissure, stenosis, incontinence and the recurrence. To prevent these complications newer methods are involved, one of them is Stapler haemorrhoidopexy. The current study was a prospective study conducted to compare the results of the conventional haemorrhoidectomy procedures (open and closed) with the stapler haemorrhoidopexy.

METHODS

This prospective study was conducted in a department of general surgery, Gandhi medical college associated Hamidia Hospital, Bhopal, Madhya Pradesh, India over period of April 2014 to August 2015. The study was approved by the local ethic committee. Following written informed consent, the patients were advise to undergo either stapled haemorrhoidopexy (the Longo technique) (n = 20) or conventional haemorrhoidectomy (the Milligan-morgan or ferguson technique) (n = 25).^{2,3}

Inclusion criteria

- All patients having conventional haemorrhoidectomy and stapler haemorrhoidopexy for grade II and grade III hamorrhoids.
- Post-operative patients of conventional haemorrhoidectomy and stapler haemorrhoidopexy coming for routine follow up in O.P.D.
- No signs of sphincter damage(no signs of fissure or anal tear)
- No other mass/growth assessed during digital rectal examination or proctoscopy.

Exclusion criteria

- All patients with grade I and grade IV haemorrhoids.
- All patients having conservative means of management of haemorrhoids.
- All patients with external haemorrhoids.
- All patients with uncertain diagnosis.

The operation was performed under either general anesthesia (in 7 of the 45 patients) or spinal anesthesia (in 38 of the 45 patients), depending on the patient's preference and the anesthesiologist's advice. Patients were placed in a position for lithotomy. A cleaning enema was given preoperatively. Preoperative antibiotics were given in this trial. The haemorrhoidectomy in the conventional group was performed according to the either milligan-morgan or ferguson 2 technique. The base of the

hemorrhoid was excised and either left open or the wound was sutured. In the stapler group, a circular anal dilatator (33mm) was introduced to reduce the prolapse of the anoderm and parts of the anal mucous membrane. A purse string suture, nonabsorbable was placed circumferentially 3 to 5 cm above the dentate line through the window of the purse string suture anoscope. Then hemorrhoidal circular stapler was positioned and fired.

The operating time was defined as the time from the beginning of the operation until the application of the endoanal dressing. All patients received a normal diet post operatively and were given lactulose for preventing hard stool. Patients in both groups were requested to perform the same cleaning of the anal region 2 to 3 times per day .Pain was assessed using a visual analog scale (VAS) in which 0 corresponds to no pain,1-3 to mild character, 4-6 to moderate amount and 7-10 to maximum amount of pain. Prescribed analgesics were given using the world health organization (WHO) system during the operation and immediately after patient recovery. Duration of hospital stay is recorded when patients discharged on conservative treatment. A follow up examination was performed 4 ,12 weeks and 6 months post operatively by either contact or routine OPD .Postoperative complications, defecation habit, urinary frequency, wound condition and return to work postoperatively were evaluated. In addition, further follow up examination was performed with regard to hemorrhoid recurrence. At the examination, defecation habits were evaluated and a proctologic examination was performed. We made a comparison of conventional haemorrhoidectomy (open and closed) haemorrhoidectomy and stapled haemorrhoidectomy procedures in terms of operative time, postoperative pain and bleeding, hospital stay, length of absence from work or disability time and complications.

Statistical analysis

All results were subjected to statistical analysis. Demographic and clinical data from the two groups were compared and intergroup differences among the parameters were recorded and were analyzed by paired t-tests, the Student t-test and chi-squared tests. Student's t-test was used for intergroup analyses and the chi-square test was used to analyze the level of significance or differences in the incidence of complications. P value of less than 0.05 was considered statistically significant and p value of less than 0.001 was considered highly significant.

RESULTS

The mean age group was 41-50 years consists of 16 patients and the majority of the patients were males consist of 38 males and 7 females. Mass per anus, pain during defecation and bleeding per rectum were the predominant symptoms. In the study, 12 patients had

grade II, each groups having six patients and 33 patients had grade III haemorrhoids out of which 19 patients have conventional haemorrhoidectomy and 14 patients have stapler haemorrhoidopexy. In the conventional group 21 patients and stapler group 17 patients are operated by spinal anesthesia. The duration of surgery was 45 minutes in conventional group and 40 minutes for stapler haemorrhoidectomy. The average duration of hospital stay for the stapled group was 3 days and for the conventional group it was 6 days. The average time to return to work in the stapled group was 10 days as against 20 in the conventional group. There is considerable decrease in pain in stapler group both in immediate post-operative and during follow up in comparison to conventional group. There is less complains of bleeding episodes in stapler group having nearly half of the patients having bleeding episodes in comparison to conventional group. Three patients in the stapled group had recurrence of the symptoms in comparison to four patients in conventional group.

Table 1: Age statistics.

Age in years	Conventional	Stapler	Total
21-30	3 75.0%	1 25.0%	4 100.0%
31-40	5 55.6%	4 44.4%	9 100.0%
41-50	7 43.8%	9 56.3%	16 100.0%
51-60	6 60.0%	4 40.0%	10 100.0%
>60	4 66.7%	2 33.3%	6 100.0%
Total	25 55.6%	20 44.4%	45 100.0%

Haemorrhoids are more common in age group 41-50 which consists of maximum (16) number of patients in both study group containing one-third of patients of the study and nine patients (56.3%) of this age group undergone stapler haemorrhoidopexy which is more than patients (7) who undergoes conventional haemorrhoidectomy.

Table 2: Sex statistics.

Sex	Conventional	Stapler	Total
Female	2 28.6%	5 71.4%	7 100.0%
Male	23 60.5%	15 39.5%	38 100.0%
Total	25 55.6%	20 44.4%	45 100.0%

Males are more in number than females in both the study group. In conventional procedure they are 23 out of 25

while in stapler procedure they are 15 out of 20 ($p=0.118$, not significant difference).

Table 3: Duration of surgery statistics.

Groups	No. of cases	Mean duration of surgery	$\pm$ SD
Conventional	25	44.00	5.00
Stapler	20	39.75	5.73

The mean duration of surgery for patients having conventional Haemorrhoidectomy is 44 ± 5 minutes while patients with stapler Haemorrhoidopexy is 39.75 ± 5.73 minutes. So an average time of 36-40 min is required in stapler haemorrhoidopexy as comparison to 41-45 min in conventional haemorrhoidectomy { $P=0.011$ [Mean duration of surgery was significantly longer in Conventional group] Student t test}.

Table 4: Duration of hospital stay statistics.

Groups	No. of cases	Mean duration of hospital stay	$\pm$ SD
Conventional	25	6.16	2.135
Stapler	20	3.25	1.932

The mean duration of hospital stay in conventional group is 6.16 ± 2.135 while in stapler group is 3.25 ± 1.932 . So patients having stapler group has less duration of stay in hospital of 3 days as compared to conventional group where it is 6 days.

Table 5: Duration of return to work statistics.

Groups	No of cases	Mean duration of return to work	$\pm$ SD
Conventional	25	20.56	10.16
Stapler	20	10.95	4.81

An average duration of return to work post operatively is less of 10.95 ± 4.81 days in patient of stapler haemorrhoidopexy as compared to patients of conventional haemorrhoidectomy where it is 20.56 ± 10.16 days. { $p<0.001$ [Mean duration of return to work significantly longer in Conventional group] Student t test}.

Figure 1: Pain.

80% of stapler patients has mild to moderate pain while conventional one having 90% patients comes with pain out of which 60% have mild to moderate and 30% have moderate to severe pain at the end of 1 month { $P=0.46$, not significant difference}. While at 3rd month stapler group have only 50% patients having mild to moderate pain in comparison to conventional where 65% patients out of which 40% have mild to moderate and 25% has moderate to severe character of pain { $P=0.34$, not significant difference} which at 6th month falls down to only 30% { $P=0.34$, not significant difference}.

Figure 2: Bleeding.

At the end of 1 month only 20% patients with stapler haemorrhoidopexy comes with complains of bleeding while 30% patients of conventional haemorrhoidectomy comes out of which 20% have mild to moderate while other 5% have moderate to severe bleeding episodes { $p=0.22$, not significant difference}. At the end of 3rd month, it further falls down to only 5% of patients with bleeding episodes in stapler group in comparison to 15% of conventional group where most of them having mild to moderate episodes of bleeding { $p=0.51$, not significant difference}.

Figure 3: Recurrence.

Stapler patient have less incidence of recurrence 15% (3/20) in comparison to conventional one in which more 16% (4/25) patients have recurrence ($p=0.92$, not significant, chi square).

DISCUSSION

The study titled “Comparison between conventional haemorrhoidectomy and stapler haemorrhoidopexy” is the prospective study done to know the efficacy of newly emerged surgical procedures against conventional haemorrhoidectomy (both open and closed). Stapler haemorrhoidopexy is one of those procedures. The use of a stapler in the treatment of hemorrhoids remains controversial. The result of prospective study comparing the gold standard conventional haemorrhoidectomy with the new stapler technique is important. We observed a significant reduction of postoperative pain in the patients who underwent stapled haemorrhoidectomy.

The mean duration of surgery for patients’ having conventional haemorrhoidectomy is 44 ± 5 minutes while patients having stapler haemorrhoidopexy is 39.75 ± 5.73 minutes. So an average time of 36-40 min is required in stapler haemorrhoidopexy as comparison to 41-45 min in Conventional haemorrhoidectomy { $P=0.011$ [Mean duration of surgery was significantly long in conventional group] Student t test}. Surgery was performed under spinal anesthesia in 17 out of 20 patients in stapler group and 21 out of 25 patients in conventional group. Rest was performed in general anesthesia. Also before stapler procedure there is dilatation of anal sphincter explaining this slightly prolonged time. The cases which are performed in general anesthesia was mainly associated with other comorbidities. Metanalysis from china performed by Shao WJ et al, and Tjandra JJ et al, from university of Melbourne found shorter operating time in stapler group than conventional one. Bickchandani et al, in a study comparing open with stapled procedure, found operating time to be much less in the stapler group.^{4,6}

In the immediate post-operative period up to 3 days, the stapler group patients had less complains of pain with average VAS score of 2 in comparison to conventional group where average score was 5.5. During follow up 80% of stapler patient has mild to moderate pain while conventional group have 90% patients comes with pain out of which 60% have mild to moderate pain and 30% have moderate to severe pain at end of 1 month ($p=0.46$, not significant difference) while at end of 3rd month stapler group have only 50% patients have mild to moderate pain in comparison to conventional group where 65% of patients have pain out of which 40% have mild to moderate and 25% has moderate to severe character of pain ($p=0.34$, not significant difference) which at end of 6th months falls down to only 30% ($p=0.34$, not significant difference). So there is considerable decrease in pain in stapler group both in immediate post-operative period and during follow up as compared to conventional group.

Most patients of conventional group complain of increase character of pain during first defecation compared to stapler group although the duration of first defecation remains same in both group of 24 hours. Also there is no

significant difference in character of pain in patients operated for skin tag and isolated piles removal in both the groups. In stapler they accounts for only one patient who have skin tag in comparison to conventional group where patients are operated for both skin tag and isolate Piles removal as additional procedure. Also there is no significant difference between closed and open techniques in terms of postoperative pain.

Gravie JF et al finds that the patients in the Stapler haemorrhoidopexy group experienced less postoperative pain during bowel movement and had less total analgesics requirement over the first 3 days. Senagore AJ et al, Boccasanta and Shao WJ et al meta-analysis showed that stapled haemorrhoidopexy was less painful than conventional haemorrhoidectomy with short duration of surgery.^{4,7-9} Randomize controlled trial done in 2007 from University Hospital, Nottingham, UK, Corman and metanalysis done by Chen JS et al from Taiwan also shows the same result regarding early postoperative pain.¹⁰⁻¹³

It is also emphasized by Nicolas et al, that by sufficient sphincter dilatation before stapler placement, a resection line at least 3 cm above the dentate line, and a cautious hemostasis during surgery, stapled haemorrhoidectomy is a safe and reliable procedure in the treatment of second and third degree haemorrhoids. Pain is more if the resection margin is close to the sensitive epithelium of the anal canal area, and may explain the bad results on pain observed in a famous study on stapled haemorrhoidectomy performed in an established colorectal center by Cheetham et al, which was highly challenged.^{14,15}

Bleeding is the second most common symptom present in the post-operative period. At the end of 1st month, only 20% of patients with stapler procedure comes with complains of bleeding while 30% of conventional patients comes for follow up out of which 20% patients have mild to moderate bleeding episodes while other 5% patients have moderate to severe bleeding episodes ($p=0.22$, not significant difference). At the end of 3rd month, it further falls down to only 5% of patients with bleeding episodes in stapler one in comparison to 15% in conventional group where most of them comes with mild to moderate episodes of bleeding ($p=0.51$, not significant). At end of 6th month only one patient come for follow up in conventional group with mild episode bleeding ($p=0.19$, not significant).

The severe bleeding episode occurs in one of patient in conventional (open) group who was also associated with other comorbidity and comes with complains of severe pain and severe bleeding episode after history of accidental trauma. Proper analgesia, dressing and treatment given but then also he comes with complains of recurrence in the 3rd month follow up and he was readmitted and treat by rubber banding. So the data show stapler group having nearly half of the patients having

bleeding episodes in comparison to conventional group. Many studies have shown no any significant difference between two groups over complains of bleeding. However all of them agree that stapler haemorrhoidopexy have shown better results in comparison conventional haemorrhoidectomy until now.

There were other complications also in the immediate post-operative period. Four patients complain of nausea and vomiting in conventional group while two of them were from stapler group. Most of these were done in spinal anesthesia also has long duration of surgery. Antiemetic along with proper hydration given to them. Two complains of urinary retention till the night of the day of surgery for which they were catheterized. One patient in conventional group complains of fever episodes and wound infection. Proper dressing and antibiotics were given him in ward and also prescribed after discharge. No any complains of incontinence present.

Duration of hospital stay

The mean duration of hospital stay in conventional group is 6.16 ± 2.135 while in stapler group is 3.25 ± 1.932 .

So patient with stapler haemorrhoidopexy have an average span of 3 days in post-operative period in comparison to 6 days in patient with conventional haemorrhoidectomy. It is also emphasized that patients having long duration of hospital stay which is 10 Days in conventional group also comes in for long follow up while in stapler group it is 7 Days who does not come for follow up for so long duration ($p=0.003$, significant difference, student t-test).

The lowest duration of hospital stay in both groups is same of three days. The patient are discharged when wound is healthy, having proper bladder and bowel habits and no any systemic symptoms is present with proper conservative means of treatment of haemorrhoids and follow up advised on discharge.

Time to return to normal work

An average duration of return to work post operatively is less of 10.95 ± 4.81 days in patient of stapler haemorrhoidopexy as compared to patients of conventional haemorrhoidectomy, where it is 20.56 ± 10.16 days [$p<0.001$ [Mean duration of return to work significantly longer in Conventional group] Student t test]. So average duration of return to work post-operative is 10 days in patient of stapler haemorrhoidopexy in comparison to 20 days in patient of conventional haemorrhoidectomy. Return to normal work is more than one and half earlier in stapler group than conventional group. The longest duration being 40 days in conventional group and 15 days in stapler group while the shortest duration being 15 days in conventional group and 8 days in the stapler group. This duration being depends on the other parameters like age, sex which

create bias in comparison. It also depends on other comorbid conditions. One patient in conventional group has 40 days for return as the patients have wound infection in post-operative period. These data is taken when patient come for the first follow up.

Metanalysis from china performed by Shao WJ et al and Tjandra JJ et al of University of Melbourne and study from University Hospital, Nottingham, UK. Found that the stapler group has lesser duration of hospital stay and earlier return to work in comparison to conventional group.^{4,5,10,11} Gravie JF et al shown the less duration of hospital stay of 2 days in Stapler as compared from 4 days in conventional one while Ganio E et al found it to be 1 day in stapler and 2 days in conventional procedure. Metaanalysis done by Chen JS et al from Taiwan and Mattana et al also shows that stapler procedure provides has lesser hospital stay and quicker return to work. Shalaby et al states duration of hospitalization and time to return to work is less in conventional (open) procedure in comparison to Stapler procedure.^{7,13,16-18}

Follow up

At the end of study of duration of 20 month, follow up of each patient properly done up to 6 month as most of the patients relieved from complications till this period. However patients coming for longer duration were also noted. In conventional group at the end of 1st month, 75% of patients come for follow up in which most of them come with complains of pain and 30% come with complain of both pain and bleeding episodes while in stapler group it was same 75% patients come for follow up in which only 20% comes with both pain and bleeding episodes And rest with pain episodes only. While at the end of 3rd month only 50% comes for follow up in which 20% comes with complains of both pain and bleeding episodes and rest with pain only while in staple group also 50% comes for regular follow up in which only 5% of patient comes with complain of both pain and bleeding and rest with pain only.

At the end of 6th month, 25% of conventional comes for follow up in which 5% patients comes with complains of both pain and bleeding, others with pain only while stapler group only 10% comes for follow up in which only one patient comes with complains of both pain and bleeding and rest with pain only. So the data shows in stapler group less number of come for follow up along with less number of complications. The longest duration of follow up in the conventional group was 15 months in 20 months study while in the stapler group it is 11 months.

During the follow up, no any complains anal incontinence, stricture, stenosis or fecal urgency was present in both the procedure. There is complains of impaired wound healing present in one patient in closed haemorrhoidectomy patient which present later with suture dehiscence. Proper antibiotic coverage along with wound dressing done following readmission. Urinary

retention is also reported into two patients of open procedure. The total postoperative complication rate was 5% (1 of 20 patients) in the stapler group and 15% (3 of 25 patients) in the conventional group excluding pain and bleeding.

Bickchandani et al, Shalaby and Mehigan et al found equal number of complications in the both conventional and stapler groups. Cheetham et al in their study of stapled haemorrhoidopexy, found 31% of patients to have fecal urgency and persistent pain following surgery. Gravie JF et al and Shao WJ et al found no differences in the resolution of symptoms observed between the 2 groups, and over 2 years, the overall incidence of complications was the same. Ganio E et al, found patients in stapler Haemorrhoidopexy group had greater difficulty in maintaining normal continence to liquid stools.^{4,6,7,15,16,18,19}

Recurrence

Stapler patient have less incidence of recurrence 15% (3/20) in compare to conventional one in which more 16% (4/25) patients have recurrence ($p=0.92$, not significant, chi square test). The patient having recurrence in conventional group are all of grade III hemorrhoid. Out of 4, one patient have recurrence at 1st month follow up who was operated by closed procedure and comes with complains of suture dehiscence who was readmitted and treated. The other two patients come in 3rd month follow up. One of them comes with prolapse symptom, operated previously by open procedure was readmitted and operated by rubber banding. One patient comes with recurrence at the 6th month follow up who was associated with other illness.

In stapler three patients comes with recurrence all of them were operated for grade III haemorrhoids, two of them come with Recurrence at 3rd month follow up and third one at the 6th month follow up who was associated with other comorbidities. One was admitted and the other one was managed routinely while the third one does not come for follow up. So there is comparatively no difference between stapler and conventional procedure regarding recurrence rate. But various other studies have found stapler procedure has more recurrence. Meta-analysis from china performed by Shao WJ et al and Tjandra JJ et al of University of Melbourne and study from University of western Ontario, London, found that the stapler group more recurrence rate in comparison to conventional group. Gravie JF et al and Ganio et al found stapler not better than conventional procedure in terms of recurrence metaanalysis done by Chen JS et al from Taiwan also shows that stapler procedure provides greater recurrence than conventional one.^{4,5,7,13,14,16,20}

CONCLUSION

We conclude that stapled haemorrhoidopexy is associated with less postoperative pain and morbidity than conventional techniques. Stapler haemorrhoidopexy has

decreased operating time, hospital stay and duration of return to work as compared to conventional haemorrhoidectomy. There is no significant difference found in terms of recurrence in both the procedures. So stapler haemorrhoidopexy is better procedure in treatment of grade II and grade III haemorrhoids in comparison to conventional Haemorrhoidectomy.

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