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Comparative study of the stapled hemorrhoidectomy against conventional hemorrhoidectomy

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Abstract--Introduction: Till recently Milligan – Morgan haemorrhoidectomy i.e. conventional or open haemorrhoidectomy is the most popular surgical treatment for haemorrhoids. With the advent of minimal invasive surgery, the scenario has changed. More recently, stapler haemorrhoidectomy is becoming popular as a day care procedure with minimal post-operative pain and early return to work. The present study is designed to compare make a comparative assessment of the Stapled haemorrhoidectomy against Conventional haemorrhoidectomy in the surgical treatment of haemorrhoids. Material & Methods: A hospital based Non-randomised comparative study was conducted in Dept. of Surgery of at a tertiary care hospital. A total of 50 eligible cases scheduled for haemorrhoidectomy in our hospital were included in the study. These 50 patients were then divided into two groups i.e. 25 for stapled procedure and other 25 patients for conventional procedure Data was analyzed using statistical software SPSS ver. 21. Results: Mean operative time was significantly less in stapler group (39.12 vs 45.75 mins; $p < 0.01$) while mean hospital stay was significantly longer in conventional surgery

group (7.02 vs 3.01 days; $p < 0.01$). Post-op complain of pain, immediately after surgery (6 hrs.) and at day 1 and day 3 was significantly less in stapler group ($p < 0.01$). Post-op complications after conventional surgery include bleeding (28%), urinary retention (12%), wound infection, anal incontinence (8% each) and anal stenosis (4%). Complications of stapler surgery include bleeding (16%) and urinary retention (4%). Mean time for return to work was significantly less in stapler group as compared to conventional surgery group (4.91 vs 13.8 days; $p < 0.01$). Conclusion: Stapler haemorrhoidectomy requires less operative time, reduces hospital stay and decreases post-operative pain. Return to normal activity is also significantly faster with stapler surgery. Stapler haemorrhoidectomy is thus recommended for all patients undergoing surgery of haemorrhoids. However there is a need to conduct larger prospective double blind trials with longer period of follow-up to study rate of recurrence alongwith trials for cost effectiveness.

Keywords---conventional haemorrhoidectomy, haemorrhoids, stapler haemorrhoidectomy, post-operative pain.

Introduction

Hemorrhoids are one of the commonest ailment that afflicts mankind, and their treatment has been subject of consideration in medical literature since Egyptian papyruses earlier than 3000 BC. Hippocrates in 400 BC mentioned burning, strangling and excision [1]. The word 'hemorrhoid' is derived from the Greek adjective hemorrhoids, meaning bleeding (haima- blood, rhoos- flowing) which is most prominent symptom. The word 'piles' is derived from the Latin word pila-meaning a ball which refers to a swelling around the anus. These terms are often used synonymously. This stands true till today as, it is difficult to obtain any accurate idea of their incidence, but rate of surgery for hemorrhoids vary form of their incidence, but rate of surgery hemorrhoids varies from 35/ 100,000 population/ year in UK to 50-60 /100,000 population / year in US [2] Prevalence in US population is 4.4% [3].

Many alternative treatment methods have been developed for hemorrhoids. Milligan – Morgan hemorrhoidectomy i.e. conventional or open hemorrhoidectomy was described in 1937, and is still the most popular surgical treatment for hemorrhoids. It has good result but is a very painful procedure resulting in increase hospital stay and having complications like immediate hemorrhage, urinary retention and late complication like incontinence, stenosis [5]. With the advent of minimal invasive surgery, the scenario has changed. More recently, Dr. Antonio Longo (1998) has advocated circular stapler hemorrhoidectomy for hemorrhoids [6]. This technique has been named "Procedure for Prolapse and Hemorrhoids (PPH)" and should be referred to as stapled hemorrhoidectomy. It has come up as a day care procedure with minimal post-operative pain and early return to work. Although it showed early promising results, expensive instrument, specialized training and a long learning curve limits the use of stapler hemorrhoidectomy. The present study is designed to compare make a

comparative assessment of the Stapled hemorrhoidectomy against Conventional hemorrhoidectomy in the surgical treatment of hemorrhoids.

Aims and Objectives

- To make a comparative assessment of the Stapled hemorrhoidectomy against Conventional hemorrhoidectomy in the surgical treatment of hemorrhoids.
- To compare stapler hemorrhoidectomy with conventional hemorrhoidectomy in term of: Operative time, Post-operative pain, Bleeding, Duration of hospital stay, Anal Incontinence/ Stenosis, Other post-op complications.

Material and Methods

Study Duration : October 2015 to September 2021

Study Population All eligible cases undergoing conventional haemorrhoidectomy and stapled hemorrhoidectomy in the Department of surgery, Dhiraj General Hospital, Pipariya and GMERS medical college and hospital Vadodara during the study period.

Inclusion Criteria

1. Age more than 18 years
2. Symptomatic hemorrhoids

Exclusion criteria

1. Asymptomatic hemorrhoids
2. Thrombosed haemorrhoids
3. Hemorrhoids with fistula in ano
4. Other ano rectal pathology

Methodology of Study

All patients admitted to both Hospital with haemorrhoids explained about the cost factor. If the patient agrees, then only Patient was operated. A detailed history was taken and all patients were subjected to thorough clinical examination including per rectal and proctoscopic examination by which further hemorrhoids was graded. According to the grades of hemorrhoids 1st grade was excluded from the surgical treatment as they were not indicated and so Grade II, Grade III, and Grade IV were included in the study for surgical treatment. Routine lab investigations like blood and screening of chest were done. A total of 25 patients underwent stapled procedure and other 25 patients underwent conventional procedure according to the patients will after explaining the procedure. The study group was analyzed post operatively on factors such as: Post-operative pain: assessed by visual analogue scale, Bleeding, Wound infections, Urinary retention, Anal incontinence and Anal stenosis All patients were assessed during the first post-operative day, day of discharge, and at follow up visits at 1st week and 3rd week post operatively.

Sample size

Sample size for stapled and conventional haemorrhoidectomy was 25 each (Total 50).

Results and Discussion

Hemorrhoidectomy is the accepted method for the treatment of symptomatic piles. Conventional hemorrhoidectomies are effective operations that have withstood the test of time; however, the problem of postoperative pain has never been satisfactorily addressed in conventional hemorrhoidectomy. The postoperative pain related to excisional hemorrhoidectomy is well known. Patients will frequently avoid definitive treatment of their disease for many years so as to avoid this problem. Also, the high postoperative morbidity and long recovery has prompted the need for an alternative procedure. Several techniques, including diathermy hemorrhoidectomy, dilatation with banding and cryo-hemorrhoidectomy have been tried.

Stapled hemorrhoidectomy was introduced in 1995 by Longo [5]. Stapled hemorrhoidectomy offers a significantly less painful alternative that provides patients definitive treatment of their disease in a single sitting [1]. A novel technique in dealing with the management of hemorrhoidal disease, it has emerged as an alternative to open hemorrhoidectomy, long considered the “gold standard”. It treats the mucosal prolapse, with concurrent disruption of the blood supply to the hemorrhoidal tissue. The technique has been standardized and the indications, contraindications, and operative technique have been defined. Several randomized trials have shown the efficacy and safety of the procedure. There has been some concern and reluctance in accepting stapled hemorrhoidectomy as few serious complications have been reported. These include fecal urgency, recto-vaginal fistula, rectal obstruction, perforation peritonitis and pelvic sepsis. These have all been seen by most investigators in the early part of the learning curve. Numerous controlled studies have later demonstrated that this technique is associated with less postoperative pain and a quicker recovery [6-17]. To further validate these findings in our set up, present study was designed to compare the short-term results of stapled hemorrhoidectomy with conventional Hemorrhoidectomy.

Age Comparision

Most common age group affected by Hemorrhoids was between 41-60 years of age with mean age of 48.9 years.

Table 1: - Mean Age Comparision

Author	Mean Age (Years)
Bikhchandani J et al. [11]	47.32
Shukla et al. [13]	43.53
Thejeswi et al. [14]	45.00
Present study	48.90

Bikhchandani J et al. [11] mean age of patients was 46.02 years (SD, 12.33) in the stapled group and 48.64 years (14.57) in the open group. Shukla S et al. [13] most common age group for patients of haemorrhoids was 41-50 years. In the study by Thejeswi PL et al. [14], mean age was 45 years. Above findings shows similar age incidence comparable to others study attributing to less fibre and water intake leading to high incidence of constipation and resulting into haemorrhoids.

Gender Comparision

Males are more commonly affected than females (56% vs 44%).

Table 2 : - Gender Comparision

Author	Male	Female
Bikhchandani J et al. [11]	83.0%	17.0%
Shukla et al. [13]	84.4%	15.6%
Thejeswi et al. [14]	75.0%	25.0%
Present study	56.0%	44.0%

Bikhchandani J et al. [11] Hemorrhoids were more common in men (ie, 80.9% and 85.7% in the stapled and open group, respectively). Shukla S et al. [13] Males are more in number than females in both the study group. In the study by Thejeswi PL et al. [14], males are more commonly affected than females. There is male predominance in all the studies as those working population staying away from home and irregular and less fibre and water intake leading to haemorrhoids.

Presenting Complain Comparision

Most common presenting complaint in patients of hemorrhoids was bleeding (86%) followed by something coming out of rectum (prolapse 72%), Constipation (36%) and pain (18%).

Table 3: - Presenting Complain Comparision

Complaints	Present Study	Thejeswi et al. [14]	Gravie et al. [16]
Bleeding	86.0%	90.0%	47.0%
Constipation	36.0%	18.0%	31.0%
Prolapse/ Mass per anum	72.0%	72.0%	90.0%
Pain	18.0%	20.0%	15.0%

Thejeswi PL et al. [14] observed bleeding per rectum as the presenting complaint in the majority of the patients with 45 of the 50 patients presenting with it; 26 patients gave complaints of a mass per anus and 10 patients complained of pain during defecation; 13 patients gave other associated symptoms such as constipation (9) and generalised weakness (3). The most common problem reported by the patients before the operation in the study by Gravie et al. [16] was the impression of a mass at the anus (90%). Other problems included frequent

bleeding (47%), itching (35%), constipation (31%), and pain (15%). Most common presentation of hemorrhoids reported and present in our study is bleeding per rectum and something coming out per rectum as patient feel shy and thus presents late and neglecting their complaints.

Grade of Hemorrhoids

Out of the 50 study cases, 8% were of grade 2 hemorrhoids while remaining 56% and 36% had grade III and IV hemorrhoids. No difference was observed between the study groups as per grade of hemorrhoids ($p>0.05$). The comparison of present study results with other studies is shown in table below:

Table 4: - Grade Of Hemorrhoids

Author	Grade II	Grade III	Grade IV
Shukla et al. [13]	26.7%	73.3%	0.0%
Thejeswi et al. [14]	44.0%	56.0%	
Present study	8.0%	56.0%	36.0%

In most of the cases surgical intervention is required only for grade III or IV hemorrhoids. Grade I and II case were general managed medically. Six cases in our study with grade II hemorrhoids had associated sever bleeding and measures to control the symptoms medically had failed. Our is a tertiary institutes where patients from far presents with their complaints with most of the patients taking primary treatment elsewhere and presenting at a later stage for their unsuccessful treatment there by higher number of patients of grade III hemorrhoids.

Time Required for Surgery

In presents study, mean operative time was significantly less in stapler group as compared to conventional surgery group (39.12 vs 45.75 mins; $p<0.01$).

Table 5: - Mean Operative Time

Author	Mean time to Surgery (mins)	
	Stapler	Conventional
Shukla et al. [13]	39.75	44.00
Thejeswi et al. [14]	45.75	62.00
Bikhchandani J et al. [11]	24.28	45.21
Gravie et al. [16]	21.00	31.00
Present study	39.12	45.75

Shukla S et al. [13] also observed similar results with mean duration of surgery for patients' having conventional hemorrhoidectomy as 44 ± 5 minutes while patients having stapler hemorrhoidectomy as 39.75 ± 5.73 minutes ($p<0.01$). Thejeswi PL et al. [14] observed average time taken for a stapled hemorrhoidectomy as 45.75 minutes (30-70min.) while conventional hemorrhoidectomy took an average of 62 minutes (45-80 mins). Bikhchandani et

al. [11] observed the mean operative time to be shorter in the stapled group 24.28 minutes (4.25) versus 45.21 minutes (5.36) in the Milligan-Morgan group ($P < .001$). Gravie et al. [16] also observed Stapled hemorrhoidectomy to be significantly faster than the Milligan-Morgan technique (21 minutes versus 31 minutes; $P < 0.001$). Conventional Hemorrhoidectomy requires clear identification of pedicle and ligation of each pedicles separately and excision of mass thus taking longer interval then stapler hemorrhoidectomy which having single continuous suturing and application of stapler.

Post-Operative Pain & Analgesic Requirement

Post-op complains of pain (as measured by VAS score) immediately after surgery (6 hrs.) and at day 1 and day 3 was significantly less in stapler group as compared to conventional surgery group ($p < 0.01$). No post-op analgesia was required in 60% cases of stapler group compared to none in conventional group. More than one dose of analgesic was required in 44% cases of conventional surgery compared to 12% cases of stapler group ($p < 0.01$).

Table 6: - Post Operative Pain Score (Vas Score) Comparison

Author	VAS score (Day 1)		VAS score (Day 3)	
	Stapler	Conventional	Stapler	Conventional
Shukla et al. [13]	3.70	4.93	3.90	1.60
Thejeswi et al. [14]	3.80	5.40		
Present study	1.80	4.60	0.89	3.21

Thejeswi et al. [14] observed the average pain scores on post-op day 1, day 2 and day 3 in the stapled group as 3.8, 2.4 and 1.6 as against 5.4, 4.3 and 3.9 in the conventional group, respectively ($p < 0.01$). As there is and excision of mass below the dentate line containing nerve endings with open wound compared to stapler hemorrhoidectomy involving mucosal excision above the dentate line causing more pain then stapler hemorrhoidectomy.

Hospital Stay

Mean hospital stay was significantly longer in conventional surgery group as compared to stapler group (7.02 vs 3.01 days; $p < 0.01$).

Table 7:- Hospital Stay Comparison

Author	Hospital Stay (Days)	
	Stapler	Conventional
Bikhchandani J et al. [11]	1.24	2.76
Thejeswi et al. [14]	1.50	6.20
Shukla et al. [13]	2.25	6.16
Present study	3.01	7.20

Bikhchandani et al. [11] observed mean hospital stay as 1.24 days (0.62) and 2.76 days (1.01) ($P < .001$) in the stapled and open group, respectively. Thejeswi et

al. [13] observed the average duration of stay in the hospital for the stapled group as 1.5 days, with 13 patients being discharged within 24 hrs of the surgery. The average duration of stay in the hospital for conventional group was 6.2 days ($p < 0.01$). Shukla S et al. [14] observed the mean duration of hospital stay in conventional group as 6.16 ± 2.135 days while in stapler group as 3.25 ± 1.932 days ($p < 0.01$). Gravie et al. [16] observed similar results with mean length of stay varying from 1.00 to 3.50 days in the Stapler group and from 1.67 to 5.00 days in the conventional group. Conventional hemorrhoidectomy requires post-operative dressing of open wound and injectable analgesics for pain thus longer hospital stay compared to stapler hemorrhoidectomy.

Complications

No significant difference was observed in the incidence of complications in the 2 groups ($P > 0.05$). Post-op complications after conventional surgery includes bleeding (28%), urinary retention (12%), wound infection, anal incontinence (8% each) and anal stenosis (4%). Complications of stapler surgery includes bleeding (16%) and urinary retention (4%).

Table 8: - Post Op Complication Comparision

Author	Present Study		Gravie et al. [16]	
	Stapler	Conventional	Stapler	Conventional
Wound Infections	0.0%	8.0%	0.0%	0.0%
Urinary Retention	4.0%	12.0%	1.9%	5.2%
Anal Incontinence	0.0%	8.0%	11.5%	8.8%
Anal Stenosis	0.0%	4.0%	0.0%	1.8%
Post-op Bleeding	16.0%	28.0%	18.0%	23.0%

Shukla et al. [13] also observed bleeding as the 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 it was present in 30% of conventional group patients. Urinary retention and wound infection was seen in 2 patients each in conventional group. Bickchandani et al. [11] and Gravie et al. [16] also found no difference in the rate of complications in the open and stapler groups respectively. Conventional hemorrhoidectomy has an open wound leading to higher incidence of bleeding and wound infection then stapler hemorrhoidectomy. Also with stapler which requires expertise there are incidence of bleeding due to improper suture line and donut.

Time to Return for Work

Mean time for return to work was significantly less in stapler group as compared to conventional surgery group (4.91 vs 13.8 days; $p < 0.01$).

Table 9: Time To Return For Work Comparison

Author	Time to return to work (Days)	
	Stapler	Conventional
Bikhchandani J et al. [11]	8.12	17.62
Shukla et al. [13]	10.95	20.56
Gravie et al. [16]	2.00	4.00
Present study	4.91	13.80

Bikhchandani et al. [11] in their study observed that patients in the stapled group returned to work or routine activities earlier (ie, within 8.12 days [2.48]) as compared with 17.62 (5.59) in the conventional group ($p < 0.01$). Similarly, Shukla et al. [13] observed average duration of return to work post operatively as 10.95 ± 4.81 days in patient of stapler hemorrhoidectomy as compared to patients of conventional hemorrhoidectomy, where it is 20.56 ± 10.16 days ($p < 0.001$). Gravie JF et al. [16] shown the less duration of hospital stay of 2 days in Stapler. Low incidence of post-operative pain and wound infection favors early recovery and return to work in stapler hemorrhoidectomy.

Conclusion

Stapler haemorrhoidectomy requires less operative time, reduces hospital stay and decreases post-operative pain. Return to normal activity is also significantly faster with stapler surgery. Stapler haemorrhoidectomy is thus recommended for all patients undergoing surgery of haemorrhoids. However there is a need to conduct larger prospective double blind trials with longer period of follow-up to study rate of recurrence alongwith trials for cost effectiveness.

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