Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/locate/mjafi

Original Article

Stapled hemorrhoidopexy – Initial experience from a general surgery center

Col S.S. Jaiswal^{a,*}, Maj Darpan Gupta^b, Sqn Ldr Saket Davera^c^a Associate Professor, Dept of Surgery, AFMC, Pune-40, India^b Graded Specialist (Surgery), 150 GH, C/o-56 APO, India^c Graded Specialist (Surgery), MH Allahabad, UP, India

ARTICLE INFO

Article history:

Received 24 June 2012

Accepted 19 August 2012

Available online 30 November 2012

Keywords:

Activities of daily living (ADL)

Hemorrhoids

Stapled hemorrhoidopexy

ABSTRACT

Background: Stapled hemorrhoidopexy is gaining popularity as a relatively painless alternative to conventional excisional hemorrhoidectomy. The initial experience from a service hospital is presented along with review of literature.

Methods: 40 cases were managed by stapled hemorrhoidopexy (SH) over a period of two and half years. The primary outcome measures assessed were the analgesic requirement in the post-operative period and the time taken to resume Activities of Daily Living (ADL). Additional outcome measures studied were; presence of bleeding per rectum, prolapse of mass per rectum, incontinence to flatus/stool, post-operative urinary retention, requirement of a repeat procedure, presence of post-operative anal stenosis, and residual external haemorrhoids at 1 week, 1, 3 and 6 months and 1 year after surgery.

Results: 40 patients with grade II, III and IV hemorrhoids underwent SH under spinal anesthesia. In the first 24 h 17 patients required a single dose of Injection Diclofenac Sodium while 19 patients required two doses and 4 patients had to be given three doses. 14 patients (35%) achieved Katz Index of Independence in Activities of Daily Living score of 6 on the first post-operative day and another 17 (42.5%) on the second post-operative day. By the fourth post-operative day all patients had achieved a score of 6. One patient had a rectal perforation as a complication of the procedure and another required a second procedure for excision of thrombosed external hemorrhoids.

Conclusion: Stapled hemorrhoidopexy is associated with less post-operative pain and early resumption of ADL. Although the procedure appears simple to perform, it can be associated with serious complications and still cannot be considered the standard of care for the operative treatment of internal hemorrhoids.

© 2012, Armed Forces Medical Services (AFMS). All rights reserved.

Introduction

Hemorrhoidal disease is common and symptomatic hemorrhoids affect >1 million individuals in the western

world per year.¹ Excisional hemorrhoidectomy (EH) is considered the most definitive treatment for both internal and external hemorrhoidal disease but since it is associated with marked post-operative pain; patients and

* Corresponding author.

E-mail address: adiaru@rediffmail.com (S.S. Jaiswal).

0377-1237/\$ – see front matter © 2012, Armed Forces Medical Services (AFMS). All rights reserved.

<http://dx.doi.org/10.1016/j.mjafi.2012.08.015>

surgeons were left searching for alternative treatment options.

Stapled hemorrhoidopexy (SH) represents the first dramatic change in the treatment of hemorrhoids in many years. This technique was introduced in 1997 by Sir Antonio Longo.² A modified circular stapler is inserted across the anus, and used to excise a circular ring of mucosal tissue from the anal canal, well above the dentate line. A stapled anastomosis is created, thus lifting the redundant, prolapsing mucosa back into the anal canal. The name of this procedure has undergone many changes. The operation is essentially a procedure of fixation; therefore the name Stapled Hemorrhoidopexy was accepted by an international working committee, and subsequently this has been the name most commonly used.³

SH is reported to be effective in the treatment of second and third-degree hemorrhoids with low morbidity, high patient satisfaction and good long-term control of hemorrhoidal symptoms.⁴ It is not routinely performed in AFMS hospitals and hence this study was undertaken to evaluate the efficacy of this modality in our set-up.

Materials and methods

This study was conducted over a period of two and a half years, from Sep 2009 to Feb 2012, at a referral and teaching hospital of the Armed Forces. Adult patients undergoing elective surgery for symptomatic hemorrhoidal disease (Grades II, III and IV) were included in the study. Patients with thrombosed/gangrenous internal or external haemorrhoids, those with presence of anal stenosis, perianal abscess and full thickness rectal prolapse and those who had undergone previous anorectal surgery/injection sclerotherapy with resultant scarring of the anal canal were excluded from the study. A total of 40 patients were treated with SH. The procedure was performed by the first author and by final year residents in General Surgery with assistance by the former.

All patients were subjected to detailed pre operative evaluation including inspection during straining, digital rectal examination and anoscopy. Colonoscopy was carried out selectively in those patients who had a positive family history of colon cancer, were older than 50 years of age or had concomitant anemia. All cases were admitted on the day prior to surgery and placed on fluid diet. Oral laxative tablets were given at bedtime followed by administration of sodium phosphate (Proctoclysis) enema, on the morning of surgery. The procedure was explained to the patient and consent obtained. Similarly the Visual Analog Scale for recording post-surgical pain was explained to the patient and co-operation sought in recording it.

All patients were operated under spinal anesthesia in lithotomy position. The Proximate Hemorrhoidal Circular Stapler (HCS), manufactured by Ethicon Endo-surgery was used in all cases. Once properly positioned, the anal canal was thoroughly examined for pathology other than hemorrhoids. The sphincter was then progressively dilated digitally, to facilitate insertion of the circular anoscope. The hub of the scope was sutured to the perianal skin with silk sutures to retain it in position. Next, the purse string suture anoscope was inserted through the circular anoscope and the purse

string suture placed approximately 4 cm cephalad to the dentate line using a 2/0 polypropylene suture incorporating only the mucosa and submucosa (Fig. 1). The purse string suture anoscope was then removed and the HCS inserted, with the head of the stapler fully opened. The purse string suture was then tightened and tied around the shaft of the stapler. Thereafter, the suture threader was passed through each of the side channels on the stapler head, and the tails of the purse string suture brought out from either side of the head of the stapler. Once the tails of the suture were brought through the side channels of the stapler head, gentle traction was applied to the suture and the stapler advanced into the anal canal such that the 4 cm mark on the head of the stapler was at the level of the anal verge, and the stapler head was tightened. When fully closed, the stapler was fired (Fig. 2). After firing, the stapler was held in position for 2 min and then withdrawn after partial untwisting and the doughnut examined for completeness. The anoscope was then inserted back into the anus, and the staple line inspected for bleeding (Fig. 3). If present, it was addressed by over sewing that aspect of the staple line with an absorbable, 3/0 polyglactin, suture. Dressings were applied and operative time and blood loss were assessed and recorded.

The patient was permitted to take oral fluids after 6 h of surgery. Pain was assessed at 6 h, 12 h, 24 h and 48 h, as per the Visual Analog Scale, and requirement of analgesia (both injectable and oral) was recorded. Inj. Diclofenac Sodium, 75 mg intramuscular, was administered to all patients who had a VAS score of more than 4 and oral NSAID (combination of Ibuprofen 400 mg with Paracetamol 500 mg) was given to others with VAS scores below that. All cases also received Injection Ciprofloxacin 200 mg and Injection Metronidazole 500 mg intravenously at the commencement of the surgery followed by Tablet Ciprofloxacin 500 mg and Tablet Tinidazole 500 mg for 3 days post-operatively. The primary outcome measures assessed were the requirement of injectable analgesic in the first 48 h post-operatively and the time taken to resume Activities of Daily Living (ADLs) which was evaluated using the Katz Index of Independence in Activities of Daily Living.⁵ The Index ranks adequacy of performance in the six functions of bathing, dressing, toileting, transferring,

Fig. 1 – Purse string suture being placed.

Fig. 2 – Stapler being fired.

continence, and feeding. Patients are scored Yes/No for independence in each of the six functions. A score of 6 indicates full function, 4 indicates moderate impairment, and 2 or less indicates severe functional impairment.

All patients were subsequently followed up for additional outcome measures such as; presence of bleeding per rectum (defecation bleeds), prolapse of mass per rectum, incontinence to flatus/stool, post-operative urinary retention, requirement of a repeat procedure, presence of post-operative anal stenosis, and residual external haemorrhoids at 1 week, 1 month, 3 months, 6 months and 1 year after the surgery. The follow-up was during OPD visits and also by telephonic interview of the patients.

Results

A total of 40 patients, symptomatic with bleeding per rectum, were included in this study. All patients underwent SH under spinal anesthesia and 28 patients have completed 1 year of follow-up. 16 patients (40%) had Grade II hemorrhoids, 22 (55%) patients had Grade III hemorrhoids and 02 (5%) patients had Grade IV disease. The youngest patient was 25 years of age and the oldest was 68 years old. There were 34 (85%) males and 6 (15%) female patients. The average

operating time was 25 min (range 20–40 min) and the average blood loss was 20 ml (range 15–35 ml).

The post-operative VAS score at 6 h, 12 h, 24 h and at 48 h is depicted (Table 1). In the first 24 h 17 patients required a single dose of Injection Diclofenac Sodium while 19 patients required two doses and 4 patients had to be given three doses. In the next 24 h the corresponding figures were 11 patients requiring one dose, 3 requiring two doses and none requiring three doses (Table 2). 14 patients (35%) achieved Katz Index of Independence in Activities of Daily Living score of 6 on the first post-operative day and another 17 (42.5%) on the second post-operative day (Table 3). By the fourth post-operative day all patients had achieved a score of 6. Eighteen patients were discharged on 3rd post-operative day. Another 18 patients, who were serving personnel, were granted further convalescence in the form of 4 weeks sick leave. 4 patients, all serving soldiers, were hospitalized for 7 days as they were unwilling to proceed on sick leave. One patient (2.5%) had a rectal perforation, on the anterior wall, for which exploratory laparotomy with repair of perforation and sigmoid colostomy needed to be done. Colostomy was subsequently closed after 6 weeks. None of the serving personnel, except the one who developed rectal perforation, was placed in low medical category after the procedure.

Minor bleeding per rectum in the first 48 h, which did not require any intervention, was noticed in 18 (45%) patients. It was still present in 5 patients at 1 month and finally disappeared altogether at 3 months of follow-up. 4 patients at 1 week and 2 at 1 month complained of prolapse of mass per rectum during defecation. Both however, recovered and became symptom free at 3 months of follow-up. Six patients had post-operative urinary retention which required catheterization. One patient (2.5%) developed post-operative thrombosis of the external hemorrhoidal mass after 72 h which was managed by excision. No patient reported incontinence to flatus or stool and none developed anal stenosis (Table 4).

Discussion

The word, hemorrhoid (haima = blood; rhoos = flowing), derives from the Greek adjective, haimorrhoides.⁶ Several

Fig. 3 – Inspection of staple line for bleeding.

Table 1 – Post-operative VAS score.

Table 2 – Post-operative analgesia requirement.

theories have been postulated regarding the cause of hemorrhoids; however, their precise etiology is still unknown. Among the many attempts to explain hemorrhoids are: venous obstruction secondary to congestion and hypertrophy of the anal cushions, prolapse or downward displacement of the anal cushions, destruction of anchoring connective tissue, and abnormal dilatation of the veins of the internal hemorrhoidal plexus. Other factors, such as heredity, age, anal sphincter tone, diet, occupation, constipation, and pregnancy, have also been implicated in the causation of hemorrhoids.⁷

Hemorrhoids can be considered external or internal. External hemorrhoids are covered with anoderm and are distal to the dentate line. Internal hemorrhoids arise above the dentate line and they are classified according to the extent of prolapse into grades I–IV.⁸ In many patients, hemorrhoidal symptoms can be relieved by simple measures, such as better local hygiene, avoidance of excessive straining, and better dietary habits supplemented by medication to keep stools soft, formed, and regular. EH is considered whenever patients fail to respond satisfactorily to conservative measures⁸ and an open or closed hemorrhoidectomy (Milligan–Morgan or Ferguson) can be performed. The closed method is generally associated with earlier wound healing but post-operative pain is probably similar to that with the open technique.⁹

Most surgeons would agree that the main challenge faced after EH is the post-operative pain. SH offers a significantly less painful alternative as it excises a circumferential portion

of the lower rectal and upper anal canal mucosa and submucosa and performs a re-anastomosis with a circular stapling device. As a result, the prolapsed anal cushions are retracted into their normal anatomic positions within the anal canal. In addition, the terminal branches of the inferior hemorrhoidal artery are disrupted, and blood flow into the cushions is thereby decreased. The strongest argument in favor of this operation is that it leaves the richly innervated anal canal tissue and perianal skin intact, thus reducing the pain usually associated with EH.⁸ SH is gradually gaining popularity in service hospitals and hence we decided to share our experience with the procedure.

In the PPH Multicenter Study Group trial¹⁰ it was demonstrated that stapled hemorrhoidopexy offers the benefits of less post-operative pain, less analgesic requirements, and less pain at bowel movement, while providing similar control of symptoms and less frequent need for additional anorectal treatments at 1-year follow-up. We have noted similar results in our series and all our patients had a post-operative VAS score of <4 after 48 h and no recurrence of symptoms on follow-up.

The operative time for SH has been demonstrated to be shorter than EH in several trials and is generally reported at 15–25 min. Our average operating time of 25 min is similar to that in other studies.^{11,12} The length of stay in the hospital is difficult to interpret and compare because of the personal preferences and employability compulsions of our patient population. Hence we have used the Katz Index of Independence in Activities of Daily Living score and found that by the fourth post-operative day all our patients had achieved the top score of 6.

SH is simple to perform but, if not done carefully, it can be associated with a number of serious complications. The most important technical consideration in SH is proper placement of the purse string suture. It must be placed at least 3–4 cm above the dentate line and should incorporate all of the redundant tissue circumferentially. Rectovaginal fistula has been reported after SH and represents a potentially devastating complication of treatment for a benign disease.¹³ It can be avoided by carefully and frequently examining the vagina at multiple times during the application of the purse string and insertion of the stapler. None of our 6 female patients developed this complication. Perforation of the rectum has been reported and was likely caused by a very low peritoneal reflection incorporated into the anastomosis.¹⁴ This was also encountered by us and was clinically manifest on the 5th post-operative day with features of generalized peritonitis. Other complications such as pneumoretroperitoneum,¹⁵ pelvic sepsis¹⁶ and rectal obstruction¹⁷ have also been reported but are fortunately rare and were not encountered by us.

SH is perhaps the most exciting new development in the definitive treatment for haemorrhoids. Contemporary studies evaluating SH as an alternative to conventional hemorrhoidectomy have shown it to be a safe and reliable alternative.^{18–21} However, few studies^{22,23} and the Cochrane analysis 2010²⁴ have concluded that SH is associated with a higher long-term risk of hemorrhoid recurrence and the symptom of prolapse and hence it still cannot be considered the standard of care for the operative treatment of internal hemorrhoids. The authors feel that a judicious approach

Table 3 – Resumption of ADL.

Table 4 – Post-operative outcome parameters.

	Parameter	48 h	1 week	1 month	3 months	6 months	12 months
1	Defecation bleeds	18	08	05	–	–	–
2	Prolapse of mass per rectum	04	04	02	–	–	–
3	Incontinence to flatus/stool)	–	–	–	–	–	–
4	Post-operative urinary retention	06	–	–	–	–	–
5	Requirement of a repeat procedure	–	01	–	–	–	–
6	Post-operative anal stenosis	–	–	–	–	–	–
7	Residual external hemorrhoids	–	01	–	–	–	–

towards adoption of this procedure in service hospitals by properly trained surgeons would help to optimize the benefits of this technique for our patient population.

Conflicts of interest

All authors have none to declare.

REFERENCES

- Gearhart SL. Diverticular disease and common anorectal disorders. In: Longo, Fauci, Kasper, Hauser, Jameson, Loscalzo, eds. *Harrison's Principles of Internal Medicine*. 18th ed. McGraw Hill; 2012:2502–2510.
- Longo A. Treatment of hemorrhoids disease by reduction of mucosa and hemorrhoidal prolapse with a circular-suturing device: a new procedure. *Proceedings of the Sixth World Congress of Endoscopic Surgery, Rome, Italy*; 1998:777.
- Corman ML, Gravie JF, Hager T, et al. Stapled haemorrhoidopexy: a consensus position paper by an international working party indications, contra-indications and technique. *Colorectal Dis*. 2003;5(4):304–310.
- Sultan S, Rabahi N, Etienney I, Atienza P. Stapled haemorrhoidopexy: 6 years' experience of a referral centre. *Colorectal Dis*. 2010 Sep;12(9):921–926.
- Katz S, Down TD, Cash HR, Grotz RC. Progress in the development of the index of ADL. *Gerontologist*. 1970;10(1):20–30.
- Hulme-Moir M, Bartolo DC. Disorders of the anorectum. *Gastroenterol Clin North Am*. 2001;30(1):183–197.
- Corman ML. Hemorrhoids. In: Corman ML, ed. *Colon and Rectal Surgery*. 4th ed. Philadelphia: Lippincott-Raven; 1998:147–205.
- Nelson H, Cima RR. Anus. In: Townsend, Beauchamp, Evers, Mattox, eds. *Sabiston Textbook of Surgery*. 18th ed. Saunders Elsevier; 2008:1433–1462.
- Arbman G, Krook H, Haapaniemi S. Closed vs. open hemorrhoidectomy – is there any difference? *Dis Colon Rectum*. 2000;43:311–334.
- Senagore AJ, Singer M, Abcarian H, et al. A prospective, randomized, controlled multicenter trial comparing stapled hemorrhoidopexy and Ferguson hemorrhoidectomy: perioperative and one-year results. *Dis Colon Rectum*. 2004;47(11):1824–1836.
- Wilson MS, Pope V, Doran HE, et al. Objective comparison of stapled anopexy and open hemorrhoidectomy: a randomized, controlled trial. *Dis Colon Rectum*. 2002;45(11):1437–1444.
- Pavlidis T, Papaziogas B, Souparis A, et al. Modern stapled Longo procedure vs. conventional Milligan–Morgan hemorrhoidectomy: a randomized controlled trial. *Int J Colorectal Dis*. 2002;17(1):50–53.
- Pescatori M. Prospective randomized multicentre trial comparing stapled with open haemorrhoidectomy. *Br J Surg*. 2002;89(1):122.
- Wong LY, Jiang JK, Chang SC, et al. Rectal perforation: a life-threatening complication of stapled hemorrhoidectomy: report of a case. *Dis Colon Rectum*. 2003;46(1):116–117.
- Ripetti V, Caricato M, Arullani A. Rectal perforation, retropneumoperitoneum, and pneumomediastinum after stapling procedure for prolapsed hemorrhoids: report of a case and subsequent considerations. *Dis Colon Rectum*. 2002;45(2):268–270.
- Molloy RG, Kingsmore D. Life threatening pelvic sepsis after stapled haemorrhoidectomy. *Lancet*. 2000;355(9206):810.
- Cipriani S, Pescatori M. Acute rectal obstruction after PPH stapled haemorrhoidectomy. *Colorectal Dis*. 2002;4(5):367–370.
- Slawik S, Kenefick N, Greenslade GL, Dixon AR. A prospective evaluation of stapled haemorrhoidopexy/rectal mucosectomy in the management of 3rd and 4th degree hemorrhoids. *Colorectal Dis*. 2007;9:352–356.
- Lan P, Wu X, Zhou X, Wang J, Zhang L. The safety and efficacy of stapled hemorrhoidectomy in the treatment of hemorrhoids: a systematic review and meta-analysis of ten randomized control trials. *Int J Colorectal Dis*. 2006;21:172–178.
- Law WL, Tung HM, Chu KW, Lac PC. Ambulatory stapled hemorrhoidectomy: a safe and feasible surgical technique. *Hong Kong Med J*. 2003;9(20):103–107.
- Nystrom PO, Quist N, Rahaave D. Randomised control trial of symptom control after stapled anopexy or diathermy excision for hemorrhoidal prolapsed. *Br J Surg*. 2010;97:167–176.
- Pasquale G, Gianpiero G, Roberto S, Lauren O, Piero N. Long-term outcomes of stapled hemorrhoidopexy vs. conventional hemorrhoidectomy: a meta-analysis of randomized controlled trials. *Arch Surg*. 2009;144(3):266–272.
- Ceci F, Picchio M, Palimento D, Cali B, Corelli S, Spaziani E. Long-term outcome of stapled hemorrhoidopexy for Grade III and Grade IV hemorrhoids. *Dis Colon Rectum*. 2008;51(7):1107–1112.
- Lumb KJ, Colquhoun PH, Malthaner R, Jayaraman S. *Stapled versus Conventional Surgery for Hemorrhoids (Review)*. The Cochrane Library; 2010. Issue 9:1–10.