Transanal Suture Rectopexy for Haemorrhoids: Chivate's Painless Cure for Piles

Shantikumar D. Chivate · Laxmikant Ladukar ·
Mahesh Ayyar · Vinayak Mahajan · Sunil Kavathe

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Abstract The aim of the study was to evaluate Chivate's new procedure of transanal suture rectopexy for haemorrhoids for pain, bleeding, hospital stay, recurrence and complications. During the period between January 2006 and December 2008, the procedure was used for 166 cases symptomatic of grade II, III and IV haemorrhoids, at six different institutes by five different colorectal surgeons. In the series, 92 cases were males and 74 cases were females; average age was 49.5 years; youngest patient was 23 years of age and eldest was of 82 years of age. According to the gradation, II—52 cases, III—86 cases and IV—28 cases were enrolled for the procedure. The piles mass was reduced by hand low and manually. The mucosa and submucosa were transfixed to muscle of the rectum by 0.5–1.0 cm long stitches. Similar stitching was continued all along the complete circumference of the rectum, 2 and 4 cm distal to the dentate line. In all cases, antibiotics and anti-inflammatory medicines were prescribed for 5 days. No pain was noticed in 162 cases; in 4 cases a pain dull in nature was described by the patients. All the 166 cases were discharged after 24 h. Intraoperative bleeding from the suture line was observed in 15 cases, which required temporary compression. On proctoscopy, in 3 cases intra-anal grade I, protrusion of piles cushion without bleeding was noticed. No incontinence, no recurrent bleeding, no frequency of stool, or no tenesmus was observed. In 2 cases, 6 months after operation, residual external piles were observed, which required excision. The procedure requires no special costly instruments or any disposables. Patients require short stay for 24 h. The procedure is a painless cure for haemorrhoids.

Keywords Haemorrhoids of grade II · III and IV · Fixing of rectal mucosa and submucosa to the muscles of the rectum by 0.5–1 cm double-locking stitches along the complete circumference at 2 and 4 cm above dentate line

Introduction

Since centuries, a large number of treatment modalities for haemorrhoidal disease are known, but none is the ideal one. The ideal treatment was not possible without understanding the definite pathology and pathological anatomy [1]. Intense study of pathology of haemorrhoids was carried in the last 35 years, which led to renew interest in, by which the development of innovative procedures occurred [2–4].

Three anal cushions are present in respective to the superior rectal end arteries at 3, 7 and eleven o'clock in the lithotomy position. The main part of the cushion lies just above the dentate line and is covered by sensitive mucosa. On cross section between the cushions and internal sphincter muscles is the submucosal layer, which consists of veins, arteries and muscular and connective fibre tissues. The piles mass is supported by fibroelastic collagen tissue and the muscular structure of Treitz (muscularis canalis ani) [5]. The venous plexus present in the form of sinusoids is known as 'corpus cavernosum of recti' [2]. Special consideration of mass, prolapse and recurrence is required for the successful cure of piles.

The pressure of the haemorrhoidal plexuses is increased due to a variety of activities, such as straining and sitting for long periods during bowel movements, lifting heavy objects, obesity and severe coughing. Straining during defaecation causes the anal sphincters to relax and simultaneously portal veins that are without valves are engorged. The veins exit through the seromuscular wall of the rectum drain into the

S. D. Chivate (✉) · L. Ladukar · M. Ayyar · V. Mahajan ·
S. Kavathe
Jeevan Jyot Hospital,
Naupada Thane 400602 Maharashtra, India
e-mail: infodoctors@yahoo.com

portal tributaries. These portal veins are trapped and blocked in the seromuscular wall during strong contraction of the rectum during defaecation. At the same time, arterial blood supply is continued, which keeps on engorging haemorrhoidal plexus and piles mass progressively [6]. Rectal bleeding is the main symptom of internal haemorrhoids. The blood is characteristically bright red. It has been suggested that the internal haemorrhoid plexus is like corpus cavernosum with direct arteriovenous communications [7]. The blood is filtered without metabolic activity and, therefore, it remains arterial, which is bright red in appearance and has a pH of arterial blood [8]. The vascular theory explains why piles mass increases in size.

The microscopic examination revealed that connective tissue fibres of the submucosa are main factors that anchor the piles cushion to the internal sphincter and longitudinal muscles of the rectum. The muscular-fibro elastic supporting tissues of the piles cushion (Parks ligament) are degenerated due to familial disorder or old age or loose elasticity due to constant stretching during straining while defaecating [9]. As the piles mass protrude out of anal canal the mucosal covering becomes fragile, which bleeds easily. The fixation of these loose prolapsing piles cushions has been understood to be the main principle of newer modalities of treatment of haemorrhoids such as stapler and Doppler Guided Haemorrhoid artery Ligation (DGHL).

The procedure was first described by Dr. Antonio Longo in 1993. It avoids wounds in the sensitive perianal and anal areas and, as a result, has the advantage of significantly reducing the postoperative pain [10]. Longo's procedure depends on shortening of long prolapsing tissue and fixing of cushions to their original position by auto-suturing above the dentate line [11–13]. In 1995, Morinaga reported a new technique for the haemorrhoidal artery ligation (HAL), in which specially designed proctoscope attached with a Doppler transducer is used for identification and ligation of haemorrhoidal arteries. Because the arteries carrying the blood inflow are ligated, internal pressure of the plexus haemorrhoidalis is decreased [14].

All the existing procedures have a recurrence rate varying between 18 % and 60 %. It is difficult to assure the patient that haemorrhoids are curable. In all procedures, haemorrhoidal vessels are occluded at one place and that is the major cause of recurrence. When an artery is ligated the viability of the parts supplied by it depends on the efficacy of the development of the collateral circulation. The latter is an accessory circuit that consists of pre-existing branches of the artery above and below the site of the occlusion. The anastomosis occurs with each other through their smaller branches (mid-zone vessels), which normally have a resistance to forward flow. However, in the event of an occlusion in the main vessel, the pressure distal to the occlusion drops and this allows reversed flow into the branches arising below the obstruction. The end result is physical enlargement of these collaterals that allow increased

forward flow to nourish the area distal to the obstruction [15, 16]. The main etiological factor of development of recurrence of the haemorrhoids is development of the collaterals in all the present procedures in which ligation of vessels is done at one site.

In the new procedure, mass, prolapse and recurrence have been taken care of. We present the study of the new procedure and compare it with Milligan-Morgan, Longo's procedure and DGHL.

Materials and Methods

Material

During the period from January 2006 to December 2008, 166 symptomatic patients of haemorrhoids of grade II, III and IV were included in the study. The study centres were at six different types of hospitals in different cities. The procedure transanal suture rectopexy for haemorrhoids was designed by Dr. S. D. Chivate; explained and demonstrated to four other surgeons. All the surgeons were doing the procedure independently after hands-on training. The thrombosed haemorrhoids were excluded from the study. The evidence was collected from the meta-analysis longitudinal prospective study, which is considered to be level one. All these patients were clinically examined and evaluated for surgery. Sigmoidoscopy was done in all the patients.

The permission from hospital ethical committee was taken, and informed consent was taken from the patients after explaining the new procedure.

Method

The bowel was prepared by oral liquids for 24 h; 30 ml of lactitol 6 hourly. Under the saddle block/spinal anaesthesia, patient was positioned in lithotomy with steep head low position, which helped in reducing piles mass in grade II, III and IV cases, and lax mucosal and submucosal tissues were replaced upwards to their original position. The anal canal was lubricated generously with lots of jelly and massaged. The Sim's speculum was used to compress and push the piles masses upwards, eventually lax mucosal and submucosal layers, containing vessels, were replaced up. A self-illuminated slit with sliding valve proctoscope was used (Fig. 1). The sliding plate was removed. The dentate line and engorged mucosa was visualized. The replaced lax mucosa and submucosa were fixed to the deeper muscles of the rectum by the stitches 0.5–1 cm in length. The stitches were passed through the depth of the mucus-submucus and part of muscle, started at three o'clock position at a distance of 4 cm proximal to the dentate line. For the stitch a 2/0 polyglactin on atraumatic 30 mm ½ circle needle was used. Precaution was taken that

Fig. 1 Operating proctoscope

stitch was not passed through and through the rectal wall, but only part of the rectal muscles was taken. The first stitch was tied and the next stitch was started 1–2 mm overlapping to the end of the first stitch, was double locked. The double locking was continued for every stitch to avoid purse string effect. The suturing was continued all along the complete circumference of the rectum at the same level. The second circumferential suture line was completed at 2 cm levels proximal to the dentate line (Fig. 2). Both the suture lines were above the dentate line, which caused no pain in the postoperative period. In short, only two circumferential suturing lines were implemented at 2 and 4 cm proximal to the dentate line in the rectal wall in the procedure.

Proctoscope

The proctoscope is made up of a uniform metal tube of 3.6 inner and 3.8 cm outer diameters; along with fibro-optic

Dr. Chivate's Procedure

Fig. 2 Diagrammatic view Dr Chivate's procedure. Suture lines 2 & 4 cm above dentate line

connection. The tube is cut of its 1/8 circumference and sliding flap is prepared opposite to the fibro-optic connection. The leading end of the tube is conical and smooth that closes the tube, which facilitates the introduction of the proctoscope and prevents faecal matter to enter in the operation field. The sliding valve can be adjusted at any length. The proctoscope is calibrated at 1-cm marking over the inner aspect of the tube. The scope retracts the anus and rectum without excessive stretching. It is a good operating scope. In other operating scopes, retraction is uncontrolled (Fig. 1).

Results

The series included 102 males and 64 females, the average age was 47.5 years; ranged between 22 and 76 years. The haemorrhoids grading II—54, grade III—88 and grade IV—24 were included in the series of 166 cases. In all the cases, frequent episodes of bleeding per rectum were noted. In grade II—24, grade III—38 and grade IV—19 cases, itching around the anus was present. Grade II—16, grade III—20 and grade IV—16 cases were suffering from discharge per rectum and spoiling underwears (Table 1). Sigmoidoscopy revealed no malignancy in any case.

Postoperative, all the patients were discharged after 24 h, except for 2 cases. Postoperative minor bleeding was noted in 3 cases that required no treatment. The haemorrhoid masses were reduced 90 % immediately postoperatively on the table, and further reduced in 3–7 days (Figs. 3, 4 and 5). The suture rectopexy for haemorrhoids had minor oozing from some stitches in 11 % of cases during operation, which was controlled by compression. The small area of the mucosal tear noted in the early 3 cases required no treatment.

Mucosal oedema present in 6/166 cases required no special treatment.

The patients were called for follow-up after 1, 2, 4, 6, 12, 24 weeks and later on yearly communicated by post for 2 years. After 6 months in 3 cases, haemorrhoid of grade I without bleeding were noted. No ischaemia or stenosis was observed in the 2-cm area between the two circumferential suturing lines on per rectal and proctoscopy examination. No recurrence of haemorrhoids or no incidence of impairment of continence was noted. Postoperative minimum pain

Table 1 Preoperative symptoms

Symptoms	All cases	Grade II	Grade III	Grade IV
Bleeding	162/166	52/166	86/166	28/166
Prolapse	140/166	36/52	86/86	28/28
Anal itching	73/166	24/52	38/86	21/28
Discharge	40/166	16/52	16/86	12/18
Pain	47/166	11/52	20/86	26/28

Fig. 3 Pre operative and post operative haemorrhoids grade IV

was present in 12/166 cases. Oral antibiotics and analgesics were given to all the patients for 5 days.

The patients were satisfied with the new procedure. There was no special cost for machine or disposables. Laxatives were continued in patients with constipation.

Discussion

In the new procedures, simple suturing at 2 and 4 cm levels proximal to the dentate line. The sutures were above the dentate line, pain free postoperative as well as later on. Milligan and Morgan procedure was presented as an excision of haemorrhoid and ligation of its pedicle in 1937 [17]. The method is very painful requiring 3–5 days of hospitalization and sedations. The patients avoid not only surgery but also the surgeons. Stapled haemorrhoidopexy, developed by Longo in the 1990s, reduces prolapse by a circular stapled mucosectomy 4 cm above the dentate line [18, 19]. The procedure is confined to the area above the dentate line, should give no pain. But the reoperation rate after stapled hemorrhoidopexy was 11 % and the most frequent indications for reintervention were persistent, severe anal pain (visual analogue pain score higher than 7) [20]. In 1995, Morinaga reported a new technique for treatment of haemorrhoids by HAL. It was used for identification of haemorrhoid arteries. In this procedure, the located arteries are ligated by figure of eight sutures,

4 cm above the dentate line, which is a pain-free area [14]. The procedures recto-ano repair for grade III and IV haemorrhoids is involved in placcation of anal mucosa, cannot be pain free [21].

In the past and now, conventional open haemorrhoidectomy is considered to be safer than stapled haemorrhoidopexy. Incidences such as sever sepsis, perforation of the rectum, retroperitoneal abscess, severe bleeding [22–25] are rarely reported complications, required anterior rectal resection and colostomy which give injury to safety feeling of surgeons about the procedure. The procedures DGHL and transanal suture rectopexy for haemorrhoids are technically safe and they are less likely complications. In the last 3 years suture rectopexy has been used in 166 cases, no untoward incidences have occurred and it is totally safe. The suture haemorrhoidopexy had minor oozing from some stitches in 11 % of cases, which was controlled by compression. The mucosal tear was noted in the early 3 % cases, but required no treatment. Surgical complications consisted haemorrhages of the staple line (18.8 %) and haemorrhages due to mucous tear (5.9 %), in staple haemorrhoidopexy [26]. The haemorrhage during operation is not comparable with the conventional haemorrhoidectomy.

The principle of open haemorrhoidectomy is to minimize the loss of skin and the perianal mucosa of the anal canal that bridges between the excised two haemorrhoids to prevent stricture. The pedicel ligation of haemorrhoid is done to

Fig. 4 Pre operative and post operative haemorrhoids grade IV

Fig. 5 Pre operative and post operative recurrent haemorrhoid grade IV

occlude blood supply at the top of anal cushions. Later on, the smaller branches of the ligated vessels start dilating and developing collaterals to join the blood vessels of the inter-mediating tissue; this is the potential cause of recurrence that remains about 18–25 % [27].

In stapler haemorrhoidopexy, only mucosectomy and autosuturing is done, the blood vessels are not ligated; it gives a similar situation in which piles masses had develop before. The fibrous tissue in submucosa remains defective and lax remains unfixed. The overall incidence of recurrent haemorrhoidal symptoms, as early as fewer than 6 months, remain in stapled versus conventional procedure: 24.8 versus 31.7 %; or as late as 1 year or more recurrence rate of stapled versus conventional procedure: 25.3 versus 18.7 % [28].

Doppler-guided HAL procedure has a recurrence rate of 12 % in 12.5-month follow-up in non-prolapsing haemorrhoids. In III and IV degree haemorrhoids, the recurrent rate was reported between 12 % and 40 % during the first year [14, 16]. In follow-up of 3 years, Chivate's rectopexy reported 3 cases of piles cushions bulging into anal canal without bleeding. In the suture rectopexy, mucosa is trans-fixed to the muscular layers of the rectum, which prevents prolapse of the piles cushion.

The superior rectal artery and its branches at the level of the plexus are numerous, which enhances the development of the collaterals in a short period. There is free arteriovenous communication through capillary circulation in the corpora cavernosa recti, which is the probable cause for recurrence in stapler or DGHL procedure.

If a long segment of an artery is occluded, it is important that side branches arising in the area are not available for the joining of collateral circulation. In Chivate's procedure, the vessels are blocked at two sites at the distance of 2 cm, which reduces the chances of development of the collaterals and recurrences.

The blood supply from seromuscular layer is unabated, which avoids the necrosis of the area of the less vessel area. In the last 3 years of follow-up, not a single case of partial or complete necrotic patch was revealed. A remarkable incidence

of failures after stapled anopexy has been recently reported by several papers, with an incomplete resection of the prolapsed tissue, due to the limited volume of the stapler casing as the possible cause [29]. In Minimal Invasive Procedure for Haemorrhoids (MIPH), in few months of operation 1–2 % recurrence of symptoms, such as bleeding, were noted, and 5 years later, recurrence accounted 20–30 %. Certainly it is true that there is no pain, but no gain too [30, 31].

In MIPH, the functional impairment is a result of multiple factors such as excision of the sensitive lower 2–4 cm of the rectal mucosa, which tests samples from the rectal content for flatus, faeces or fluid. The capacity of the rectum is reduced as it is divided in two parts like an hourglass clock. These factors cause incontinence, tenusmus and increased frequency of stools [32]. In the conventional haemorrhoidectomy, piles cushions are removed resulting in impairment of continence. In the mega series, faecal soiling/leakage 31 %, and faecal urgency 40 % were observed in stapled haemorrhoidopexy [33]. In suture rectopexy, no mucosa is excised. No change in bowel habit or any incontinence was reported. Same is true for DGHL.

Conclusion

Chivate's transanal suture rectopexy for haemorrhoid is a very simple stitching procedure, and the learning curve is minimal. It has equal successful outcome in all grades of haemorrhoids and similar results were achieved by five different surgeons. The procedure had been successful in controlling mass, prolapse and recurrence of haemorrhoids. Other procedures such as DGHL and Longo's procedures are simple and without pain, but cost is exuberant and recurrence is about 18–40 %. The evidence was collected from meta-analysis longitudinal prospective study, which is considered as evidence level one. All the surgeons had similar good results, gives the degree of the recommendation A. It has evidence number one and recommendation A. The new method still requires long follow-up to consider it as accepted painless cure for the haemorrhoids.

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