Stapled Hemorrhoidectomy/-opexy

75

Erik R. Noren and Sang W. Lee

Indications

- Grade II–III internal hemorrhoids (particularly if failed other management options).
- Select patients with Grade IV internal hemorrhoids, for example.
- Chronically prolapsing.
- Temporarily incarcerated with subsequent reduction and resolution of thrombosis/edema.
- Reducible after induction of anesthesia and little thrombosis.
- Rectal mucosal prolapse.

Contraindications

- Severe anal stenosis preventing proper insertion of the anoscope/stapling device
- Active infection at or near the operative site (e.g., abscess, fistula)
- Grade IV hemorrhoids with extensive thrombosis or gangrene
- Previous radiation treatment to the anorectum
- Neutropenia, active chemotherapy
- Previous anal surgery involving the anal canal
- Inflammatory bowel disease
- Anoreceptive intercourse

Evaluation and Preparation

- Review the patient's history, rule out other diseases, and match diagnosis of symptomatic hemorrhoids with clinical and functional aspects to define the goals of the hemorrhoid treatment (operative versus nonoperative).
- Anorectal exam including anoscopy: Evaluate the internal hemorrhoids and the degree of prolapse (patient-reported and during Valsalva maneuver), assess the degree of any external hemorrhoid component, and define their impact with the patient (relevant versus innocent bystander).
- Single-dose prophylactic antibiotics.
- Bowel cleansing: Administration of two fleet enemas prior to the procedure; full bowel preparation if full colonoscopy planned at the same time).
- Colon evaluation: Either prior to or as first part of the procedure based on general guidelines; colonoscopy: history of rectal bleeding and age above 40 years; flexible sigmoidoscopy for younger patients.

Pitfalls and Danger Points

- Inadequate protection of the anal canal with the retractor leading to excision too close to the dentate line causing significant postoperative pain.
- Placement of staple line too proximal to hemorrhoidal apex leading to inadequate resection and increased risk for recurrence.
- Gaps between purse-string suture bites result in incomplete resection and greater risk for recurrence.
- Improper deep suture bites result in full-thickness transection rather than mucosal and submucosal excision.
- Inclusion of posterior vaginal wall in staple line causing rectovaginal fistula in female patients.
- Inadequate hemostasis and control of bleeding at staple line.

E. R. Noren · S. W. Lee (✉)
Department of Surgery, Division of Colorectal Surgery, Keck School of Medicine of the University of Southern California, Los Angeles, CA, USA
e-mail: sangwl@med.usc.edu

C. E. H. Scott-Conner et al. (eds.), *Chassin's Operative Strategy in General Surgery*,
https://doi.org/10.1007/978-3-030-81415-1_75

- Stapled hemorrhoidopexy is not indicated for repair of full-thickness rectal prolapse.

Operative Strategy

Anesthesia and Positioning

The choice of anesthesia is determined by surgeon preference. The authors' preference is to perform the procedure under conscious sedation and local anesthetic setting; however, spinal block anesthesia or general anesthesia can afford superior relaxation and paralysis for young muscular male patients.

Stapled hemorrhoidopexy can be effectively performed in either lithotomy or prone jackknife patient positions. The surgeon should choose the position with which he or she is most comfortable operating.

Placement of the Retractor and Reduction of Prolapse

Correct positioning of the circular anal dilator sets up the operation for success. It is important for protection of sensitive tissues as well as optimal positioning of prolapsed mucosa and hemorrhoid cushions for resection. The anal dilator is secured in the optimum position with stay sutures for the entirety of the operation to facilitate visualization of the dentate line and protection of the internal sphincters.

Purse-String Suture Placement and Transection of the Rectal Mucosa

A purse-string suture is employed to pull the redundant mucosa and hemorrhoid cushions into position for resection. Meticulous submucosal suture bites avoid incorporation of excessive muscle tissue in the resection. Identify the correct location within the rectum, avoid gaps between bites, and be mindful of the natural tendency to inadvertently shift successive bites distally, toward the anal verge. The quality and location of the purse string determine the quality of the resected specimen.

A specialized circular stapler is employed for concurrent excision of redundant rectal mucosa, devascularization of the remaining hemorrhoids, and restoration of the hemorrhoidal cushions to their normal anatomical position. A series of important safety maneuvers when closing and firing the stapler device are designed to minimize risk and ensure adequate excision. The technique is described in the following sections.

Avoiding Postoperative Complications

Ensure full insertion of the anal dilator for protection of the dentate line and internal sphincters. The transparent dilator allows for visualization of the dentate line location. Failure to protect these structures may result in significant postoperative pain, stenosis, or impaired continence.

Placement of the purse-string suture is critical. It should be located 1–2 cm above the hemorrhoid apex and 3–4 cm above the dentate line with bites limited to the mucosa and submucosa.

Palpate the posterior vaginal wall in female patients. Verify that it has not been incorporated in the closed stapler.

Documentation Basics

Coding for surgical procedures is complex. Consult the most recent edition of the AMA's *Current Procedural Terminology* book for details (see references at the end). In general, it is important to document:

- Findings and indications
- Specific indication
- The distance of purse-string suture placement with respect to the top of the hemorrhoid pedicles and dentate line
- Mucosal and submucosal placement of the purse-string sutures
- Vaginal examination in female patients prior to firing of the stapler
- Macroscopic appearance of resected specimen for complete tissue ring
- Staple line unity and location relative to dentate line
- Hemostasis

Operative Technique

Stapler Sets and Instruments

Stapled hemorrhoidopexy stapler sets are available from two manufacturers: Proximate® PPH Circular Stapler Set (Ethicon, Johnson & Johnson, Cincinnati, OH) and EEATM hemorrhoid and prolapse stapler set with DST Series TM (Covidien, Medtronic™, Norwalk, CT). Choice of the device will depend on surgeon preference and institution contracting. The technique described below is based on the use of the Covidien device.

EEATM Hemorrhoid and Prolapse Stapler Set comes with a hemorrhoid stapler, detachable anvil, and nested anal dilator. The anal dilator consists of an anoscope with a bridge, an obturator, and a winged suture port (Fig. 75.1).

Fig. 75.1 (©2020 Medtronic. All rights reserved. Used with the permission of Medtronic)

A limited number of surgical instruments are required to perform the procedure: a pair of long DeBakey forceps, a long needle holder, a pair of suture scissors, 2-0 Surgipro® suture with V-20 needle (Covidien), and a pack of 3-0 Polysorb pop-offs with V-20 needles.

Placement of the Retractor and Reduction of Prolapse

Following induction of conscious sedation and positioning according to surgeon preference, apply perianal block with a local anesthetic (see Chap. 74, Excisional Hemorrhoidectomy for details of technique). Insert the lubricated obturator; this will often help reducing the prolapsed mucosa and hemorrhoids. Remove the obturator and reinsert it, nested within the anoscope and the suture port. Ensure that the wings of the suture port line up anteriorly and posteriorly in order to avoid limited access caused by contact with ischial tuberosity (Fig. 75.2). Prior to suturing and throughout the procedure, the suture port must be in place. It may be sutured in place, at the surgeon's preference. It is critical to ensure that the suture port is fully inserted and covers the dentate line and anoderm. Milking out the anoderm by countertraction to ensure full insertion can be helpful. Withdraw the obturator. Confirm, with direct visualization, that the anal port completely covers and protects the dentate line and sphincters. The anoderm must not be visible through the channel of the anal port.

In patients with a recessed anus, it may be difficult to fully place the anal port and to completely retract the anoderm out of the surgical field. In this case, four interrupted effacing sutures can be placed between the skin at the anal verge and anal margin several centimeters away from the anus. This will allow the anoderm to be everted out and away from the field.

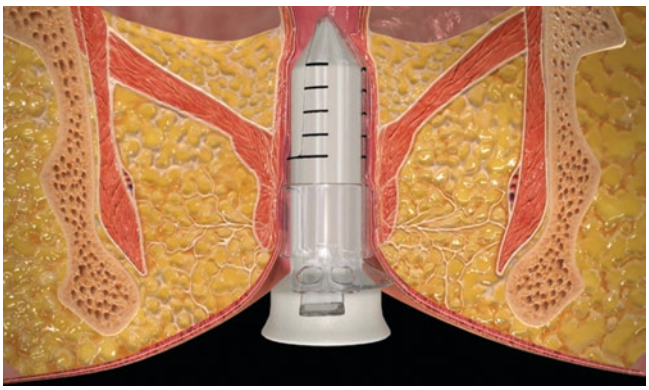

Fig. 75.2 (©2020 Medtronic. All rights reserved. Used with the permission of Medtronic)

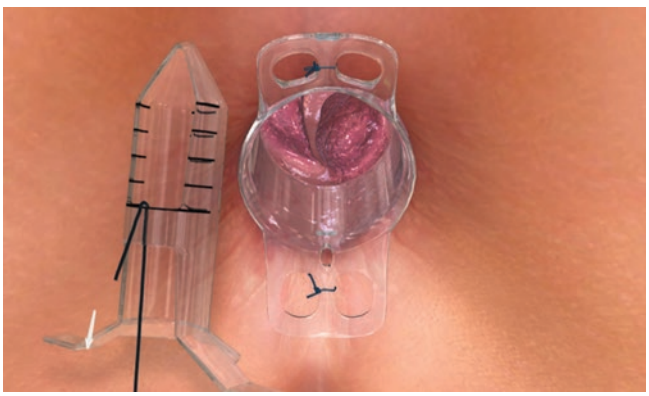

Fig. 75.3 (©2020 Medtronic. All rights reserved. Used with the permission of Medtronic)

Purse-String Suture Placement and Transection of the Rectal Mucosa

Place the tail end of the purse-string suture (2-0 Surgipro®) through the lumen and over the bridge of the anoscope. The tail end of the suture will rest between the anoscope and the suture port during the purse-string suture placement (Fig. 75.3).

Insert the suture anoscope via the anal dilator and identify the location within the rectum for purse-string suture placement, 1–2 cm above the hemorrhoid apex and 3–4 cm above the dentate line. Place a circumferential purse-string suture using 2-0 monofilament suture, taking 8–12 submucosal bites. Take great care to avoid incorporating deeper layers (Fig. 75.4). With Covidien stapler set, it is not necessary to remove and reposition the suture anoscope between each bite. It is important to not leave gaps by starting each bite near the exit point of the previous. Utilize the graduated markings on the anoscope to maintain a consistent level

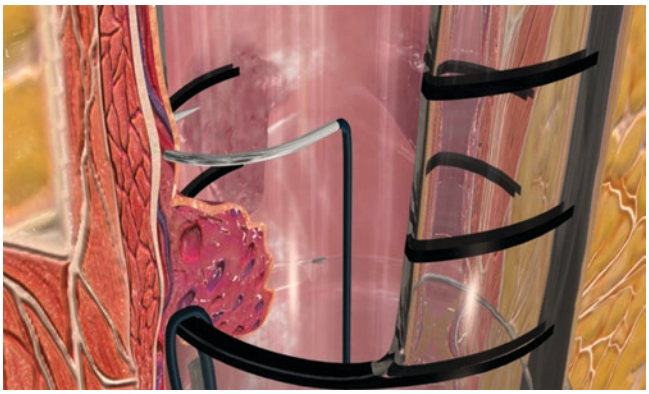

Fig. 75.4 (©2020 Medtronic. All rights reserved. Used with the permission of Medtronic)

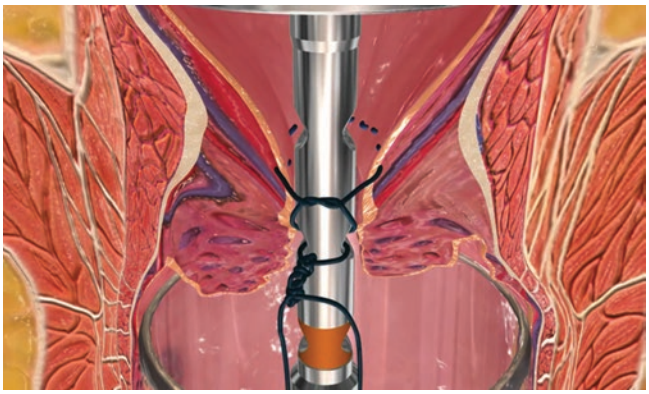

Fig. 75.6 (©2020 Medtronic. All rights reserved. Used with the permission of Medtronic)

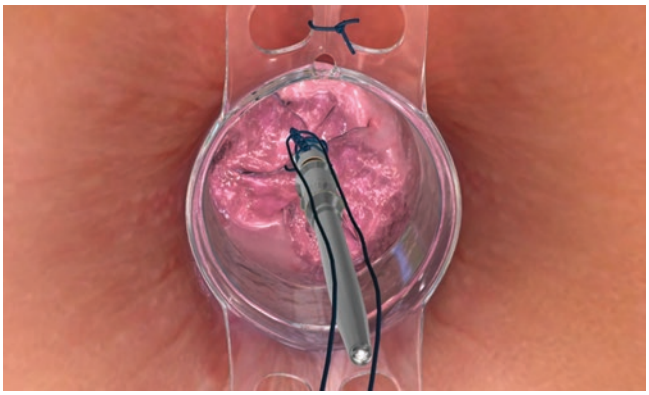

Fig. 75.5 (©2020 Medtronic. All rights reserved. Used with the permission of Medtronic)

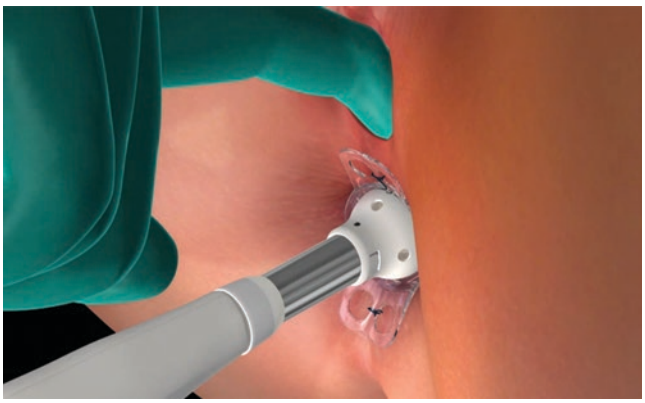

Fig. 75.7 (©2020 Medtronic. All rights reserved. Used with the permission of Medtronic)

within the rectum. Upon completion, a careful manual and visual inspection of the purse-sting suture is required to verify that there are no gaps. If the purse-string suture is not correct, remove and reapply it (Fig. 75.5).

Lubricate the anvil and insert it past the purse-string suture by gently angling it. Straighten the anvil post within the anal canal once it is above the purse-string suture. Cinch the purse-string suture and tie it around the post of the anvil. Inspect the entire suture again to ensure that there is no gap. Insert the two ends of the purse-string suture in opposite directions through one of several holes in the center rod. The choice of the particular hole is tissue and surgeon dependent. In most cases, the second hole on the anvil post may be appropriate for optimal tissue removal (Fig. 75.6).

After attaching the anvil to the stapler, close the device. At this point, it is critically important to digitally inspect the posterior vaginal wall in female patients. Slight back and forth motion of the stapler should confirm that the vaginal wall is free of entanglement (Fig. 75.7). The final verification of the staple line distance away from the anal verge can be accomplished by inspecting the marking at the outer side of the stapler. The marking at the anal verge should read between 3 and 4 cm. If the marking is less than 2 cm, the level of the staple line is probably too close to the dentate line and the purse-string suture may need to be replaced (Fig. 75.8).

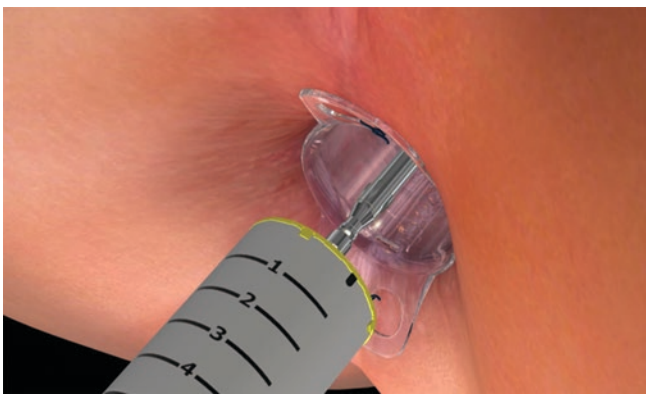

Fig. 75.8 (©2020 Medtronic. All rights reserved. Used with the permission of Medtronic)

Maintain the stapler handle in line with the anal canal while tightening. Wait 30 seconds with stapler in the closed

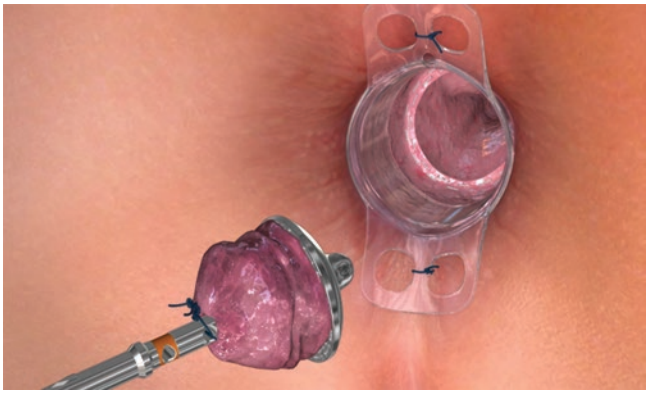

Fig. 75.9 (©2020 Medtronic. All rights reserved. Used with the permission of Medtronic)

position prior to firing to minimize edema and promote hemostasis. Release the safety feature and fire the stapler by firmly squeezing the handle. Avoid twisting or torqueing the stapler during firing. It is important to completely close the device handle with single squeeze. In order to facilitate this, firing the stapler in standing position is recommended. After firing, the stapler can be removed following three half turns of the black handle (Fig. 75.9).

Inspection for Hemostasis and Removal of Retractor

Open the stapler and remove the resected specimen for inspection. Proper technique yields a robustly cylindrical donut which—upon cutting it open and laying it on a flat surface—has a rectangular appearance with smooth edges and no or only a minimal amount of visible muscle fibers.

Replace the anoscope without the surgical port and carefully inspect the staple line for bleeding. Control staple line bleeding with 3-0 absorbable sutures in a figure of eight fashion, avoiding use of electrocautery when possible. Dress with ABD pad and a stretch mesh brief.

Postoperative Care

- Discharge: PPH is routinely performed as an outpatient surgery, though short stay hospitalization for observation as determined by surgeon discretion is also appropriate.
- Fluid management: Restrict fluid administration to minimize risk for urinary retention. If the patient is unable to void within 6 hours, an indwelling catheter should be placed, attached to a gravity drainage leg bag, and a voiding trial attempted in 24 hours.
- Diet: The patient may resume their regular diet when recovered from anesthesia.
- Stool management: Instruct the patient to maintain soft bulked stools with use of fiber and stool softeners as needed.
- Pain management: Consider a multimodal approach to pain control, whereby oral analgesics are sufficient in most cases.
- Wound care: As there is no external wound, there is no need for specific wound care. Sitz baths may support relaxation.

Complications

Overall complication rate is similar to traditional hemorrhoidectomy:

- Bleeding
- Urinary retention
- Excessive postoperative pain—incorporation of dentate line
- Thrombosed external hemorrhoids
- Rectovaginal/rectourethral fistula
- Pelvic sepsis
- Anal canal stenosis

Further Reading

American Medical Association. Current procedural terminology: CPT ®.Professional ed. Chicago: American Medical Association; 2013. http://www.ama-assn.org/ama/pub/physician-resources/solutions-managing-your-practice/coding-billinginsurance/cpt.page.

Burch J, Epstein D, Baba-Akbari A, et al. Stapled haemorrhoidopexy for the treatment of haemorrhoids: a systematic review. Color Dis. 2009;11:233–44.

Giordano P, Gravante G, Sorge R, Ovens L, Nastro P. Long-term outcomes of stapled hemorrhoidopexy vs conventional hemorrhoidectomy: a meta-analysis of randomized controlled trials. Arch Surg. 2009;144(3):266–72.

Kaiser AM. McGraw-Hill manual: colorectal surgery. Access Surgery; 2009. Retrieved 12 Aug 2017, from http://accesssurgery.com/resourceToc.aspx?resourceID=211.

Pescatori M, Gagliardi G. Postoperative complications after procedure for prolapsed hemorrhoids (PPH) and stapled transanal rectal resection (STARR) procedures. Tech Coloproctol. 2008;12(1):7–19.

Rivadeneira DE, Steele SR, Ternent C, et al. Practice parameters for the management of hemorrhoids (revised 2010). Dis Colon Rectum. 2011;54:1059–64.

Tjandra JJ, Chan MK. Systematic review on the procedure for prolapse and hemorrhoids (stapled hemorrhoidopexy). Dis Colon Rectum. 2007;50:878–92.

Tucker H, George E, Barnett D, Longson C. NICE technology appraisal on stapled haemorrhoidopexy for the treatment of Haemorrhoids. Ann R Coll Surg Engl. 2008;90(1):82–4.