Plaints after surgery. Technically, the new PPH03 stapler device has a quick-close knob, which allows rapid opening and closing. The closed staple height of 0.75 mm increases staple line compression on tissue and key blood vessels, hence minimizing bleeding. Prior to this, stapled hemorrhoidectomy was done using the PPH01 device.

Conclusions

Stapled hemorrhoidectomy using the new PPH03 stapler is a safe, short and effective procedure in the management of hemorrhoids. It can be done in the ambulatory setting and patients have few postoperative complications.

Key words

Stapled hemorrhoidectomy • PPH03

Abstract Background

Stapled hemorrhoidectomy is an established treatment for hemorrhoidal disease. We evaluated our experience with stapled hemorrhoidectomy using the new Procedure for Prolapse and Hemorrhoids (PPH03) Proximate HCS hemorrhoidal circular stapler (Ethicon Endo-Surgery). Methods We retrospectively reviewed clinical data for 238 patients who had undergone stapled hemorrhoidectomy in our department over a 2-month period. Patients were followed-up for a median of 3.5 weeks (range, 1–11 weeks) and were analyzed for complications and resolution of symptoms. Results The hemorrhoids treated were third- and fourth-degree, as well as second degree (after failure of other therapies). Mean duration of surgery was 12.7 minutes (range, 5–20 minutes) and the majority of patients was treated with an ambulatory procedure. Most patients were discharged within 6 hours after surgery. On follow-up, 3.7% of patients had minor complaints after surgery. Technically, the new PPH03 stapler device has a quick-close knob, which allows rapid opening and closing. The closed staple height of 0.75 mm increases staple line compression on tissue and key blood vessels, hence minimizing bleeding. Prior to this, stapled hemorrhoidectomy was done using the PPH01 device. Conclusions Stapled hemorrhoidectomy using the new PPH03 stapler is a safe, short and effective procedure in the management of hemorrhoids. It can be done in the ambulatory setting and patients have few postoperative complications.

Key words

Stapled hemorrhoidectomy • PPH03

Introduction

Hemorrhoidectomy is one of the most commonly performed anorectal operations. It is usually necessary when hemorrhoids are complicated by prolapse and persistent bleeding, or when internal hemorrhoids remain symptomatic after ligation or sclerotherapy. Stapled rectal mucosectomy was introduced in 1997 [1] and stapled hemorrhoidectomy (SH) was reported one year later [2] as a less painful alternative to the open Milligan-Morgan procedure. Generally, studies have found that patients who have had stapled hemorrhoidectomy have less pain and experience faster recovery compared to those treated with conventional hemorrhoidectomy [2–6]. The short-term benefits of SH are established and our center is very familiar with SH and have previously used the PPH01 (Ethicon Endosurgery, Cincinnati, USA) stapling device. Here we report our experience with the new Procedure for Prolapse and Hemorrhoids (PPH03) Proximate HCS hemorrhoidal circular stapler (Ethicon Endo-Surgery, Cincinnati, USA), which is a modified version of the PPH01 stapler and available for use since April 2004.
Patients and methods

A retrospective review of 238 patients who had undergone SH using the new PPH03 stapler over two months (April to June 2004) was conducted. We reviewed the demographic data as well as indications for and duration of surgery. We also assessed post-operative complications on follow-up visits over a median of 3.5 weeks (range, 1–11 weeks). Complications were divided into major, which necessitated admission, and minor, which could be treated conservatively on an outpatient basis.

Operative technique

SH was performed using the PPH03 (Ethicon Endosurgery, Cincinnati, USA) Proximate HCS hemorrhoidal circular stapler by five consultant colorectal surgeons. The PPH03 is a new enhanced version of the PPH01 stapler and the operative technique is essentially similar to that used with PPH01.

The patient was prepared for surgery in the standard fashion and was placed in the lithotomy position under anesthesia. A circular anal dilator (CAD 33) was gently inserted and secured into the anus. The obturator was then removed and replaced with a pursestring anoscope (PSA33). Any external hemorrhoids and skin tags were reduced into the anal canal as previously described [6, 7]. A pursestring suture was then placed, taking submucosal bites at a level of 4 cm above the dentate line, by rotating the gap in the anoscope. The anoscope was then removed and the stapler was inserted with the distal anvil beyond the pursestring suture. The pursestring suture was then tied snugly around the anvil shaft. The loose ends of the suture were brought out through a hollow shoulder of the stapler with the aid of the supplied suture threader (ST100). This allowed traction on the pursestring as the stapler is closed and enabled loose anorectal mucosa distal to the pursestring to be pulled proximally into the stapler housing. We incorporate the hemorrhoids for excision during PPH. In women, the vagina was palpated before firing, to ensure that it was not included in the resection. After firing, the jaws were kept closed for 30 s for hemostasis. Thereafter, the jaws were opened, the surrounding tissues were freed and the entire stapler with the circular dilator was removed. Hemostasis was then carried out with either diathermy or suture ligation.

The new features are that of a more ergonomic design, tighter closed staple height of 0.7 mm for better hemostasis, and a quick-close knob which allows for less turns for opening and closing.

Results

A total of 238 patients had stapled hemorrhoidectomy with the PPH03 circular stapler during the 2-month study period. There were 142 patients with fourth-degree, 76 with third-degree and 20 with second-degree hemorrhoids. The 20 patients with second-degree hemorrhoids were symptomatic and had failed ligation or injection sclerotherapy. The median age of patients was 46 years (range, 17–91 years). There were 115 males (48.3%) and 123 females (51.7%). All the patients had an American Society of Anesthesiologists (ASA) grading of 1 or 2. None of the patients had previous perianal surgery. The presenting symptoms were that of bleeding (142 cases; 59.7%), prolapse (49 cases; 20.6%), both bleeding and prolapse (27 cases; 11.3%), thrombosis and pain (18 cases; 7.6%), and change of bowel habit (2 cases; 0.8%).

Colonoscopy was performed prior to surgery if clinically indicated. The mean operating time was 12.7 minutes (range, 5–20 minutes). Overall, 222 patients were scheduled for elective ambulatory surgery, 7 were operated on as elective inpatients admitted on the same day of surgery, and the remaining 9 patients underwent stapled hemorrhoidectomy on an unscheduled, emergency basis. The 222 patients admitted for day-surgery were discharged 6 hours after surgery. The 7 patients electively admitted as inpatients were not operated in day surgery because of patient preference. The 9 patients operated as semi-emergency had been admitted through the emergency department. Five of these 9 patients presented with acute pain as a result of thrombosis and the remaining 4 presented with bleeding; they were all operated at the same admission at their request. All patients were operated under general anesthesia, with the exception of a 91-year-old woman who had regional anesthesia.

There were no intraoperative adverse effects or intraoperative complications. Twelve patients (5%) were admitted immediately after the scheduled day surgery due to pain (5 cases; 2.1%) or urinary retention (7 cases; 2.9%). Another 13 patients (5.5%) were readmitted after discharge for secondary hemorrhage (12 cases; 5%) or stenosis (1 case; 0.4%). Surgical management was necessary for 6 of these patients, while the rest were treated conservatively. The surgical procedures were: anoplasty for stenosis (1 case), examination under anesthesia (EUA) and hemostasis for bleeding (4 cases), and lateral sphincterotomy for anal fissure (1 case). Five of the 12 patients admitted for secondary hemorrhage required blood transfusion, including the four who underwent EUA and hemostasis. All 7 patients admitted for urinary retention were temporarly catheterized, and were able subsequently discharged after they were able to urinate on their own after a median duration of 2.5 days (range, 1–3 days). Those admitted for pain were discharged after a median duration of 1 day (range, 1–3 days).

During the follow-up period of 1–11 weeks (median, 3.5 weeks), 14 patients (5.9%) failed to return and were considered lost to follow-up. At the first follow-up appointment, 156 patients (65.5%) were well and had no complaints. The remaining 68 patients (28.6%) had minor complaints such as mild pain (n=18), slight staining or bleeding (n=16), skin tags (n=15), slight difficulty in evacuation (n=11), pruritus (n=5) and mucous discharge (n=3). All patients underwent a gentle digital rectal exam-
ination and were found to have neither stricture nor bleeding. On the second post-operative follow-up, 58 of the 68 who had minor complaints were now well and asymptomatic. The remaining 10 patients with minor complaints had residual skin tags (n=3), anal discomfort (n=2), slight bloodstaining (n=3), and difficulty in evacuation (n=2). The two patients who had difficulty in evacuation were found to have mild anal stricture, which was managed satisfactorily with finger dilatation. Hence, at the end of the follow-up period, only 8 patients (3.7%) had minor complaints.

Discussion

Stapled hemorrhoidectomy (SH) is performed above the dentate line whereby a band of prolapsed rectal mucosa is excised and the remaining hemorrhoidal tissue is apposed and stapled using the device. As the wound is in the rectum, there is less postoperative pain and less need for wound care. These factors reinforce the feasibility of SH being performed as a day-surgery procedure. In our study period, 93.3% of patients were operated on as an elective ambulatory procedure and 89.5% of them did not require immediate postoperative admission. This compares with conventional hemorrhoidectomy, where most patients prefer the option of hospital admission postoperatively [4]. Furthermore, with less postoperative pain, there is a lower rate of readmission due to pain and acute urinary retention. Urinary retention is one of the most important reasons for hospital stay and re-admission following surgery, and some authors have suggested a correlation between degree of pain and urinary retention [5]. In our series, urinary retention occurred in 2.9% of patients, which is relatively low compared with 34% reported in other series involving conventional hemorrhoidectomy [9], bearing in mind that the type of anesthesia is a confounding factor as well. In SH series using other staplers such as PPH01 and CEEA 34 and stram-kit (Tyco Healthcare, Norwalk, US), Law et al. [5] reported urinary retention in 6.3% of patients.

In our experience, SH is a relatively fast procedure, with a mean operating time of 12.7 minutes. This is faster than previously reported by our institution for the PPH01 stapler, where the mean operating time was 17.6 minutes [10]. The new stapler device has a quick-close knob that allows rapid opening and closing, which maintains controlled tissue compression. Moreover, the closed staple height of 0.75 mm increases staple line compression on tissue and key blood vessels, thereby reducing bleeding and operating time as there is less need for hemostasis.

In our series, the PPH03 stapler was easy and safe to use. There were no intraoperative complications and at the end of the follow-up period, only 3.7% of patients had minor complaints.

We have also used the new circular stapler on 5 patients with acute thrombosed, circumferential, prolapsed hemorrhoids in the emergency setting, for which stapled hemorrhoidectomy has been shown to be feasible and less painful and to provide faster recovery compared to conventional hemorrhoidectomy [10]. These 5 patients had no post-operative complications. Stapled hemorrhoidectomy has already been shown to be safely applicable to acutely thrombosed internal hemorrhoids and symptomatic circumferentially prolapsed fourth-degree hemorrhoids [8].

Drawbacks of the new PPH03 stapling device are those of SH in general, i.e. the cost of the device, advanced surgical skill required and the learning curve [11]. Furthermore, we are still analyzing long-term results of SH, since Ortiz [12] reported high recurrence rates and tenesmus at 1 year. High recurrence rates have also been noted in other meta-analyses [13, 14].

In conclusion, stapled hemorrhoidectomy using the new PPH03 stapler is a relatively safe and short procedure for the management of hemorrhoids and can be done in the ambulatory setting with satisfactory short-term results. It is a modification of the previous PPH01 stapler with a low rate of immediate postoperative complications, although long-term results are still awaited.

References

trial including incontinence scoring, anorectal manometry, and endoanal ultrasound assessments at up to 3 months. Dis Colon Rectum 43(12):1666–1674

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