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ORIGINAL ARTICLE

Modification to stapled mucosectomy technique with PPH. Experience of a surgical group



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KEYWORDS

Hemorrhoidectomy;
Stapled
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Abstract

Background: Haemorrhoidal disease is a common disorder. Surgical treatment is indicated in cases of advanced disease. However, postoperative pain, operative time, and technical difficulties have prompted the search for new procedures and improve the existing ones. A modification is proposed to the technique of PPH (Procedure for Prolapse and Haemorrhoids) stapled haemorrhoidectomy that facilitates and standardises the procedure without altering its benefits.

Objective: To describe the postoperative results and short-term evolution of patients with internal haemorrhoidal disease, who underwent stapled mucosectomy with PPH with a modified technique.

Materials and methods: This is a retrospective review of 35 patients who underwent stapled haemorrhoidectomy with a modified technique by the same surgical team.

Results: Twenty-five patients were men (71%) and 10 women (29%). Sixteen patients had grade III internal haemorrhoid disease (46%) and 19 grade IV (54%). The mean operative time was 31 min. Six patients had acute urinary retention. There were no cases of severe pain, bleeding, haematoma, stenosis, incontinence, thrombosis, or re-operation. The median hospital stay was 1 day.

Conclusions: The proposed modification of PPH haemorrhoidectomy is performed with greater technical ease without increased morbidity, preserving the advantages of the original technique.

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PALABRAS CLAVE

Hemorroidectomía;
Mucosectomía con
engrapadora;
Engrapadora PPH

Modificación a la técnica de mucosectomía con engrapadora PPH. Experiencia de un grupo quirúrgico**Resumen**

Antecedentes: La enfermedad hemorroidal es una dolencia muy común. El tratamiento quirúrgico está indicado en los casos de enfermedad avanzada. Sin embargo, el dolor postoperatorio, el tiempo quirúrgico y las dificultades técnicas han promovido la búsqueda de nuevos procedimientos para mejorar los existentes. Proponemos una modificación a la técnica de hemorroidectomía con engrapadora *Procedure for Prolapse and Haemorrhoids* (PPH), que facilita y estandariza el procedimiento sin alterar sus beneficios.

Objetivo: Describir los resultados posquirúrgicos y la evolución a corto plazo de pacientes con enfermedad hemorroidal interna sometidos a hemorroidectomía con engrapadora PPH con técnica modificada.

Material y métodos: Estudio retrospectivo de 35 pacientes con enfermedad hemorroidal interna a quienes se les realizó hemorroidectomía con engrapadora PPH con técnica modificada por un mismo equipo quirúrgico.

Resultados: Veinticinco pacientes fueron hombres (71%) y 10 mujeres (29%). Dieciséis pacientes presentaban enfermedad hemorroidal interna grado III (46%) y 19 grado IV (54%). El tiempo quirúrgico promedio fue de 31 min. Seis pacientes presentaron retención aguda de orina. No se reportaron casos de dolor severo, sangrado, haematoma, estenosis, incontinencia, trombosis o reintervención. La mediana de hospitalización fue de un día.

Conclusiones: La modificación a la técnica de hemorroidectomía PPH propuesta plantea una mayor facilidad técnica sin agregar mayor morbilidad, conservando las ventajas de la técnica original.

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Background

Haemorrhoidal disease is one of the most common conditions in humans, described in texts as old as the Ebers Papyrus.¹ Its incidence cannot be exactly assessed as patients tend to oppose consultation, because of ignorance or fear. Epidemiological studies mention that approximately 10 million people in the USA suffer from this condition.²

For the management of haemorrhoids, most patients only require modifications in their lifestyle, including a diet high in fibre with abundant liquid, hygienic habits such as cleaning with wet wipes and to avoid long periods of time on or reading in the toilet.

Some patients need therapeutic options in the consulting room for grade I, II and sometimes III haemorrhoids, such as ligation, sclerotherapy and photocoagulation. Conventional surgical treatment of haemorrhoidal disease, only reserved for patients with grade III and IV haemorrhoids, is considered to be gold standard and the point of reference for any therapeutic and surgical technique. However, the postoperative pain produced by dissection and resection in the anorectal region has motivated surgeons to look for other alternatives such as the use of harmonic scalpel or the PPH stapler (*Procedure for Prolapse and Haemorrhoids*, Ethicon Endo-Surgery Inc.).

PPH stapled haemorrhoidectomy is indicated in patients with predominantly internal haemorrhoidal disease who present grades II–IV with prolapsed tissue, bleeding, but with no thrombosis and no external symptoms.³ The procedure may be performed in an outpatient's clinic or with hospitalisation for 24 h. Local or general anaesthesia may be used.

In the original technique a purse string suture is performed with 2-0 polypropylene placed approximately 2 cm above the dentate line, with multiple points involving the rectal submucosa. Later the transanal stapler is introduced and the suture is tied around the axis. The stapler is closed and fired, excising a circumferential strip of mucosa and submucosa from the proximal anal canal, with automatic closure of the defect by the staple ring and affixing it to the rectal wall, interrupting any blood supply.⁴ This way, the technique may become slow and sometimes difficult by the number of points that the purse string suture involves and the lack of standardisation of its height with respect to the dentate line.

Objective

To describe the postoperative outcomes and the short-term evolution of patients with internal haemorrhoidal disease who underwent PPH stapled haemorrhoidectomy with modified technique.

Material and methods

A retrospective study was conducted including 35 patients with grade III and IV internal haemorrhoids, with no external components, who underwent PPH stapled haemorrhoidectomy with modified technique performed by the same surgical team. The operative time, analgesic control and operative and postoperative complications during hospitalisation were analysed. The postoperative pain was classified

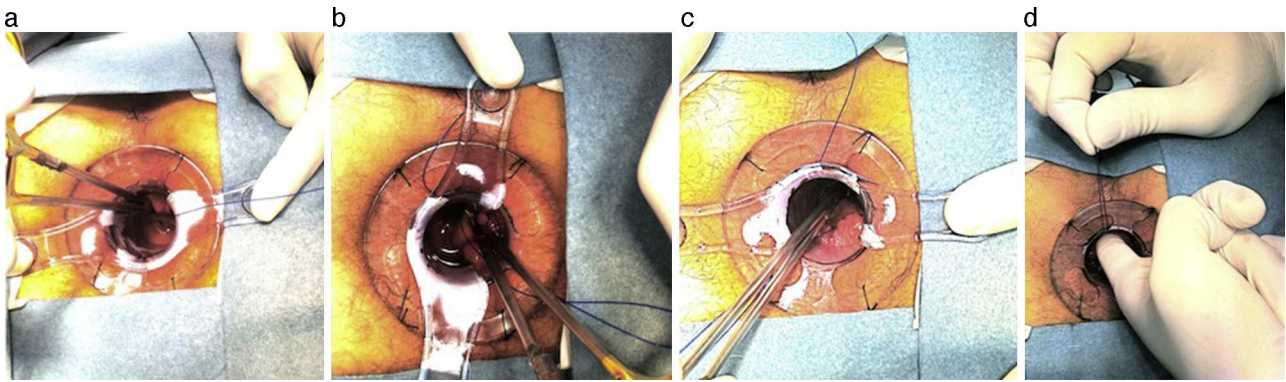


Fig. 1 Modification to stapled mucosectomy technique with PPH. (a–c) Suture with four cardinal points; the anterior point is more superficial to avoid involving the rectovaginal septum or the prostate. (d) Verification of the uniform circumferential closure.

on a scale of four points (without pain, mild pain, moderate or severe pain). All patients who may have had other additional anorectal conditions or who may have undergone any other surgical procedures were excluded.

For the modification in the technique we presented, with the patients already under the effects of general anaesthesia and caudal block, we used 0 Prolene with CT1 curved needle (Ethicon) to perform the purse string suture. In males, sutures are performed in the point located between the body and the head of the stapling device; in females, the sutures are performed 1 cm away from that point due to anal canal anatomy of females. Only four cardinal points are located, starting from posterior quadrant and the rest in clockwise direction. The anterior point would be more superficial to avoid involving the rectovaginal septum in the case of females, or the prostate in males. A digital rectal exam is performed and suture is slightly pulled to check the circular closure is uniform (Fig. 1). In the case of female patients, a vaginal examination is made and the suture is pulled to be sure that the rectovaginal septum is not involved. The anoscope is pushed onto the anterior wall to modify the anorectal angle and to facilitate the introduction of the stapling device. The stapler is then closed and we wait for 1 min to compress the tissue and reduce the interstitial liquid. A second vaginal examination is performed and the stapler is gently moved to verify the rectovaginal

septum has been respected. The stapler is turned on, we wait again for 1 min to improve haemostasis, excising the circumferential redundant mucosa (Fig. 2). The line of staples is checked and haemostatic points are put in place, if necessary.

Results

The study included 35 patients diagnosed with internal haemorrhoidal disease. Twenty-five patients were men (71%) and ten women (29%) with an average age of 47 (30–67). Sixteen patients presented grade III haemorrhoids (46%) and nineteen presented grade IV (54%). The average operative time, defined as the time from the beginning of the procedure to the complete removal of the surgical field, was 31 min (15–60 min). No complications were reported during the surgical procedures. The median hospital stay was one day. During their hospital stay, 6 patients, who received caudal block anaesthesia presented acute urine retention. In reference to the analgesic control during hospitalisation, there were no cases of severe pain regarding the location of a too low stapled line. There were no cases of haematoma, clinically significant bleeding, stenosis, incontinence or anorectal thrombosis reported. No patient needed to be re-operated on.

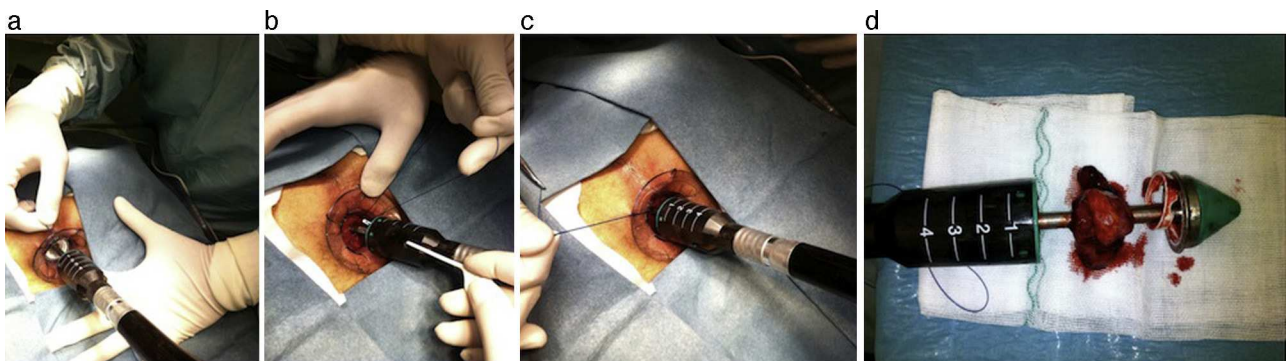


Fig. 2 Modification to stapled mucosectomy technique with PPH, cont. (a) Modification of the anorectal angle to facilitate the introduction of the stapler. (b) Suture is tied around the axis. (c) Stapler is closed and there is a waiting time of 1 min. Stapler is activated and again there is a waiting time of 1 min. (d) The circumferential strip of redundant tissue is removed.

Argument

It is estimated that 5% of general population suffers from secondary symptoms of haemorrhoidal disease and that half of the people aged 50 and over have presented experienced secondary symptoms of this disease at some point.⁵ This is a rare condition before 20 years of age and the prevalence peak is between the ages of 45 and 65,² as this study shows. Treatment may vary from conservative management, involving changes in diet and lifestyle, the use of different drugs, topical agents and clinical procedures, to a variety of surgical techniques used in the cases of more advanced degrees of the disease.

The conventional haemorrhoidectomy, open or closed, is considered to be gold standard; nevertheless, postoperative pain has forced surgeons to look for new surgical techniques and to improve the already existing ones.

In the 1990s, Uranues et al.⁶ mentioned that Longo suggested a circular haemorrhoidopexy technique excising a circumferential strip of mucosa and submucosa by performing a circular line of staples above the dentate line, which divided the terminal branches of the upper haemorrhoidal arteries and reduced the blood supply to the distal haemorrhoidal venous plexus. The indications for PPH stapled haemorrhoidectomy include predominantly the internal haemorrhoidal disease, grade II–IV with prolapsed tissue, bleeding with no presence of thrombosis and no external symptoms.³

There are comparative studies that have shown similar or shorter operative times in favour of circular haemorrhoidopexy, compared to conventional haemorrhoidectomy, with better analgesic control, faster recovery in patients in the first group and similar complication rates for both groups^{5,7–10}; however, the usual technique is not free of complications and risks, such as those related to a staple line located too high or too low, rectal wall injuries or internal sphincter lesion caused by a purse string suture that involves too much tissue, risking secondary inflammation, infection, dysfunction or incontinence. There can also be bleeding, acute retention of urine, stenosis or thrombosis.⁴ All those risks can be potentially prevented if a standardisation of the technique is developed, objectively establishing the height of the purse string suture, which involves less quantity of tissue when setting the cardinal points and confirming that the integrity of the rectovaginal septum is respected.

The modification to the original technique presents different potential advantages; all preserving the benefits of the PPH stapled haemorrhoidectomy. Since the procedure is performed near to the dentate line, far from the somatic innervation of the anoderm, postoperative pain is usually mild and with an adequate control of pain with the usual analgesic regimen. The standardisation of the suture height at the level of the stapler "neck" allows the performance of the suture 20 mm nearer the dentate line, which is the distance recommended by the medical bibliography.^{2,5,11} The use of 0 Prolene with CT1 curved needle (Ethicon) allows the taking of only the necessary submucosa tissue without going deeply into the rectal wall, to reduce potential complications. The placement of 4 cardinal points presents advantages such as a lower manipulation and a lower secondary inflammation, which reduces the postoperative pain and surgical time. According to the results of this study,

the surgical time is within the parameters described in the medical bibliography, although it is important to emphasise that multiple studies do not define the methodology used to calculate it. The more superficial anterior point and the double verification through vaginal examination to make sure the rectovaginal septum has been respected may reduce the pain and the risk of complications such as rectovaginal fistulas. The correction of the rectal angle facilitates the introduction of the stapler, with lower manipulation and a shorter surgical time, and standardises the height of the line of staples.

In our series, six patients who underwent caudal block anaesthesia presented acute urine retention. For this reason, the surgical group stopped using this kind of anaesthesia, considering this complication to have no relation to the surgical technique. In contrast with other series,^{9,10} there were no cases of haematoma, significant bleeding, stenosis, incontinence, thrombosis or re-intervention.

In general, the length of hospital stay is less than one day, which allows for an earlier return to normal activity. The evolution of the patients at medium and long term is still to be studied. In addition, as it was a series of cases, a future comparison to a control group is needed.

Conclusion

The technical modifications that we present in this study facilitate the surgical technique and standardise the height of the staples line without adding greater morbidity, and they even potentially reduced the complications described for PPH stapled haemorrhoidectomy. For these reasons, we believe this is a viable option to be considered in the performance of this procedure.

Conflict of interest

The authors declare that there are no conflicts of interest.

References

1. Manzanilla Sevilla M. Historia de las hemorroides y su tratamiento quirúrgico. *Rev Mex Coloproctología*. 2005;11:4–7.
2. Kaidar Person O, Person B, Wexner SD. Hemorrhoidal disease: a comprehensive review. *Am J Coll Surg*. 2007;204:102–17.
3. Morales-Olivera JM, Velasco L, Bada-Yllán O, Vergara-Fernández O, Takahashi-Monroy T. Experiencia inicial en el tratamiento quirúrgico de la enfermedad hemorroidal con la engrapadora PPH. *Rev Invest Clin*. 2007;59:108–11.
4. Understanding the procedure for prolapse and hemorrhoids. An alternative approach to the surgical treatment of hemorrhoids. USA: Ethicon Endo-Surgery, Inc.; 2012.
5. Sneider EB, Maykel JA. Diagnosis and management of symptomatic hemorrhoids. *Surg Clin N Am*. 2010;90:17–32.
6. Longo A. Treatment of hemorrhoidal disease by reduction of mucosa and hemorrhoidal prolapse with a circular suturing device: a new procedure. In: *Proceedings of the sixth world congress of endoscopic surgery*. Bologna: Monduzzi Editore; 1998. p. 777–84.
7. Stolfi VM, Sileri P, Micossi C, Carbonaro I, Venza M, Gentileschi P, et al. Treatment of hemorrhoids in day surgery: stapled hemorrhoidopexy vs Milligan–Morgan hemorrhoidectomy. *J Gastrointest Surg*. 2008;12:795–801.

8. Sgourakis G, Sotiropoulos GC, Dedemadi G, Radtke A, Papanikolaou I, Christofides T, et al. Stapled versus Ferguson hemorrhoidectomy: is there any evidence-based information? *Int J Colorectal Dis.* 2008;23:825–32.
9. Wen H, Chih C, Chung Y, Paul L, Jeng W. Randomized comparison between stapled hemorrhoidopexy and Ferguson hemorrhoidectomy for grade III hemorrhoids in Taiwan: a prospective study. *Int J Colorectal Dis.* 2007;22:955–61.
10. Ng KH, Ho KS, Ooi BS, Tang CL, Eu KW. Experience of 3711 stapled haemorrhoidectomy operations. *Br J Surg.* 2006;93:226–30.
11. Williams R, Kondylis L, Geisler D, Kondylis P. Stapled hemorrhoidopexy height as outcome indicator. *Am J Surg.* 2007;193:336–40.