

Pneumoperitoneum, retropneumoperitoneum and pneumomediastinum after stapled hemorrhoidopexy

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Abstract

There are several surgical techniques for the treatment of hemorrhoidal disease, the most used currently being stapled hemorrhoidopexy. Complications of this procedure are rare, although they may occur. The aim of this study is to report the clinical case of a patient with severe complication of rectal perforation after stapled hemorrhoidopexy. A 44-year-old man who presented anal pain in his postoperative period of hemorrhoid with urgent computed tomography evidencing rectal perforation with pneumoperitoneum, retropneumo-peritoneum and pneumomediastinum. Rectal perforation is a specific complication of surgery using stapler. One of the serious consequences is pneumoperitoneum, whose air leaked through the rupture of the rectal wall can reach the mediastinum, causing pneumomediastinum. These complications can be avoided by taking care of the triggering of the stapler device, in addition to post-surgical evaluation, such as rectal exploration before discharge.

Keywords: Stapled hemorrhoidopexy; Complication; Pneumoperitoneum; Pneumomediastinum.

Introduction

Hemorrhoids are defined as an increase in anal vascular cushions that often cause discomfort, itching, pain and

bleeding, especially during defecation [1,2]. It is a disease with a prevalence rate of 4% to 34% [2,3], being more common in individuals aged 45 to 65 years [1]. Its main etiology is believed to

be the degeneration of the anal canal epithelium, leading to rupture of the Parks ligament, also known as dentate line or pectinate line, responsible for supporting the anal cushions, and consequently to hemorrhoid prolapse and the onset of symptoms [3].

Classification of hemorrhoids is based on the location or extent of the prolapse. As for the location, they can be internal or external, that is, above or below the jagged line, respectively. As for the extent of the prolapse, there are first-degree hemorrhoids, which are located inside the rectum; second-degree, which present with prolapse during defecation, followed by spontaneous reduction; third-degree, who suffer prolapse and need manual reduction maneuver; and fourth-degree hemorrhoids, which cannot be reduced [3].

Treatment can range from a conservative or even surgical approach, depending on the severity and degree of prolapse. Surgery is indicated in grade III and grade IV hemorrhoids and occurs in 10 to 20% of symptomatic patients [1, 3]. There are several surgical techniques for the treatment of hemorrhoidal disease, such as hemorrhoidectomy (using the technique of Milligan & Morgan, Ferguson, Parks, among others) and, the most used currently, mechanical hemorrhoidopexy with a circular stapler, described by Longo [1, 3-6].

This technique, also known as Procedure for Prolapse and Hemo-

rrhoids (PPH), has advantages in terms of shorter recovery time and less postoperative pain [3-9]. Complications of PPH are rare, although hemorrhoid recurrence, persistence of symptoms (in 5% of patients), chronic anal pain (2%), anal fissure, stricture, fecal urgency or incontinence, bleeding, peritonitis, rectal perforation, sepsis, among other changes presented in this article [1-3, 5, 6, 8, 9]. We report a case of rectal perforation with pneumoperitoneum, pneumoretroperitoneum and pneumomediastinum after stapled hemorrhoidopexy.

Case Report

A 44-year-old male underwent stapled hemorrhoidopexy with a diagnosis of grade III internal hemorrhoids with moderate/major mucosal rectal prolapse. He presented with anal pain and sporadic bleeding, with previous unsuccessful clinical treatment.

The patient underwent elective surgery without operative complications, and hemorrhoidopexy was performed with a 33 mm circular stapler, with reinforcement of the stapling line with continuous suture. He was discharged from the hospital on the first postoperative day, with no complaints, and was advised to return to an outpatient clinic.

The patient sought the emergency department on the 4th postoperative day, complaining of significant anal

pain associated with anal bleeding. During the physical examination on admission, severe anal pain was noted on digital rectal examination and the presence of discontinuity of the rectal mucosa at anoscopy.

Computed tomography of the abdomen and pelvis with intravenous

contrast was performed as an emergency, where extensive gaseous foci were identified dissecting the entire retroperitoneum up to the posterior mediastinum (Figure 1), with some gaseous foccus in a preperitoneal situation and other rare foccus of free pneumoperitoneum (Figure 2).



Figure 1. CT of chest showing foci of pneumomediastinum apos hemorrhoidopexy.



Figure 2. CT of pelve showing foci of pneumoperitoneum apos hemorrhoidopexy.

In addition, signs of surgical manipulation were observed in the region of the distal rectum and anal canal, with densification and liquid lamina in the pre-sacral and mesorectal space, without collections. An apparent focus of discontinuity in the right lateral aspect of the surgical manipulation area in the rectum was also highlighted, suggesting an area of surgical dehiscence.

The patient underwent emergency surgical revision, with resuture of the staple line via endoanal with absorbable thread (Vicryl®). He was referred to the ward and treated with intravenous antibiotic therapy with ciprofloxacin 400 mg every 12 hours and metronidazole 500 mg every 8 hours for 7 days, with complete resolution of anal pain and bleeding.

The patient was discharged on the 7th postoperative day without complaints and was referred for outpatient follow-up. The patient is in the 3rd month of postoperative follow-up, with no surgical complications or complications related to pneumoperitoneum or pneumomediastinum.

Discussion

Treatment of hemorrhoidal disease in most cases is clinical, but surgery is indicated when conservative treatment has not improved and in symptomatic patients with grade III and grade IV hemorrhoids [10]. The literature describes and compares different options of surgical treatment,

both conventional and non-excisional, and the technique used in this case report is hemorrhoidopexy with a stapler, also known as PPH, described by Longo in 1998 [4,8]. The patient in our report presented grade III internal hemorrhoids, with significant prolapse, and symptoms of pain and anal bleeding, and elective surgery was indicated.

The PPH consists of using a circular stapler to extract a complete circular strip of the rectal mucosa above the dentate line, which elevates the prolapsed hemorrhoidal tissue, removing the redundant and excess mucosa, while the remaining hemorrhoidal tissue and the final branches of the upper hemorrhoidal artery are stapled – the ligature is guided by ultrasound with Doppler, facilitating the identification of hemorrhoidal vessels for suture [4,6,10,11]. Most studies associate this technique with several advantages in terms of efficacy, safety, shorter recovery time and less postoperative pain when compared to conventional hemorrhoidectomy [3-9], although it is subject to some postoperative complications, as reported in our case.

Complications can be classified as early if they occur up to 7 days after surgery (median value of 16.1%, excluding pain), or late, after 7 days (23.7%) [4]. Among the early complications are bleeding (most common), pain, fecal urgency, rectal stenosis, submucosal hematoma, early

thrombosis of external hemorrhoids, in addition to specific complications of stapled hemorrhoidopexy, such as failures in the stapling weapon, urosepsis, pelvic sepsis, rectal perforation, sepsis with retropneumoperitoneum and pneumomediastinum [1,4].

The most common late complications again include bleeding, in addition to incontinence and fecal urgency and/or flatus, painful evacuation, tenesmus, anal itching, anal fissure, anal stenosis, anastomotic cysts and intramural fistulization [1,4]. A lower rate of complications was associated with stapled hemorrhoidopexy compared to other methods, except tenesmus, which is more commonly reported in PPH [4]. It is also worth mentioning that these rates are higher and present worse results in patients with grade IV hemorrhoids [2].

Attention should be paid to bleeding, as in addition to being very prevalent early and late in the postoperative, it can often be avoided. The most common causes are dehiscence or bad position of the stapling ring; inaccuracy of the suture; presence of tissue in the stapling line; pelvic floor descent; or even secondary to inflammation and/or staple rejection [4,9].

Excessive bleeding can be avoided by manual stitching of the stapling line; preferential use of the PPH03 pistol (more hemostatic and uses closure with smaller staples); maximum

firing of the pistol; handling of the endoanal sponge in the postoperative; and greater experience of the surgeon with PPH [2,4]. In case of hemorrhagic shock, it is possible to have laceration in the rectovesical region, which requires the execution of colostomy and placement of transanal abdominal drain and anal drain [9].

Our case also warns about another early, rare and specific complication of stapled hemorrhoidopexy: rectal perforation, which can have severe and fatal consequences for the patient. One of them is peritonitis, caused by staple dehiscence and associated with increased pressure in the rectal region due to blood accumulation [1].

Another complication associated and described in this case is pneumoperitoneum, whose leaked air through the rupture of the rectal wall can spread through the esophageal hiatus and reach the mediastinum, also causing pneumomediastinum [1,8]. In healthy young patients, such as our case who is 44 years old, pneumoperitoneum is commonly tolerated, but it represents a risk to the elderly and patients with comorbidities, since the increase in intra-abdominal pressure can alter hemodynamics, as well as cause esophageal reflux and emphysema [8].

Comparing our patient with the few cases of pneumoperitoneum and pneumomediastinum after PPH reported in the literature, there was a difference in the initial health condition,

in which they had abdominal pain and fever (around 38°C) [2,5,6,7,8,9,12], while our patient reported only complaints of anal pain and anal bleeding. On the other hand, digital rectal examination and anoscopy findings, showing discontinuity of the rectal mucosa, and radiological findings were similar. Paying attention to any complaint after surgery and warn about possible complications are essential for early diagnosis and management.

Due to these complications, caution is recommended in the use of the PPH, avoiding double firing of the stapler, which could predispose to rectal perforation due to a possible laceration and stretch of the mucosa according to the subsequent use of the device [6], in addition to exploration digital rectal examination before discharge [5].

As a management, the rare cases of pneumoperitoneum, retropneumoperitoneum and pneumomediastinum after the procedure cited in the literature report emergency exploratory laparotomy, fecal shunt and pelvic drainage [1,2,9]. Our patient underwent emergency surgical review, in addition to intravenous antibiotic therapy after the procedure, reversing anal pain and anal bleeding without additional complications.

Conclusion

Despite the great evolution in the surgical technique for the treatment of hemorrhoids, post-surgical complica-

tions resulting from stapled hemorrhoidopexy may occur.

In the above case, computed tomography showed extensive gaseous foci from the retroperitoneum to the posterior mediastinum, together with signs of surgical manipulation in the distal rectum and anal canal and a focus of discontinuity, findings compatible with pneumoperitoneum, pneumoretroperitoneum, and pneumomediastinum resulting from rectal perforation are rare associated complications to PPH.

Therefore, stapled hemorrhoidopexy is a safe and effective method indicated for the treatment of prolapsed hemorrhoids, with a low rate of complications [2,6]. However, the surgeon who adopts this procedure should not only be alert about the execution of the technique, respecting the anatomy of the rectal wall, but also the possibility of serious and fatal complications, knowing how to identify and treat early any severe adverse effect [5,6,8].

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