Pneumoretroperitoneum after a STARR Procedure Performed One Year after a Posterior Colporrhaphy: A Case Report and Review of the Literature

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Keywords

Pneumoretroperitoneum · Transtar™ · STARR · Obstructed defecation syndrome

Abstract

Transanal rectal resection with a stapling instrument (STARR) has been shown to be effective and safe for the treatment of obstructed defecation syndrome (ODS). Nevertheless, the wide range of complications described in the literature necessitates a rigorous patient selection and a tailored approach for the management of complications. We present here a case of pneumoretroperitoneum which occurred after a STARR procedure for ODS was performed nearly a year after previous anterior and posterior colporrhaphy. The diagnostic workup did not reveal a staple-line defect. Laparoscopy did not show any intra-abdominal pathology. The symptoms resolved under oral antibiotics. The patient was discharged on day 10 after admission. Scarring in the rectovaginal septum from a colporrhaphy 1 year earlier might have contributed to a suboptimal staple-line closure during the STARR procedure, leading to a pneumoretroperitoneum. We discuss this complication and provide a brief review of the literature.

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Introduction

The STARR procedure involves the use of a transanally applied stapling instrument for rectal resection to treat obstructed defecation syndrome (ODS). Although

well established for this indication [1], major complications such as rectal perforation and even fatal necrotizing pelvic fasciitis have been reported [2–4].

Pneumoperitoneum, or rather pneumoretroperitoneum after a transanal stapling procedure, leaves the clinician with a major uncertainty regarding the management of complications. In this case report, we describe a case of pneumoretroperitoneum after a STARR procedure performed with the Contour® Transtar™ curved cutter stapler 1 year after a posterior and anterior colporrhaphy. The related literature is discussed in a brief review.

Case Report

A 70-year-old female patient was referred to our surgical department with a 2-year history of constipation. The evaluation of the patient's history, constipation scores, clinical examination, and diagnostic workup (that included MRI defecography and pelvicography with opacification of the small bowel loops as well as the bladder) indicated ODS due to an anterior rectocele and a rectal intussusception (Fig. 1, 2). An enterocele was ruled out. A relevant descent of the perineum was not observed. Colonoscopy did not show any pathology. Five months previously, she had undergone anterior and posterior colporrhaphy in the gynecological department of our institute to treat a second-degree cystocele and a rectocele. Since then, she had noticed a deterioration of her ability to evacuate her rectum and a severe worsening of the sensation of incomplete defecation, having to digitate more frequently and to strain. Conservative measures including laxatives, dietary management, pelvic floor exercises, and biofeedback therapy had not been of much help. The patient refused transanal irrigation therapy or the fitting of a pessary.

A transanal approach to excise the intussusception was decided by the joint pelvic-floor multidisciplinary team (MDT) at our in-

Fig. 1. Pelvicography showing a rectal intussusception (black arrow) and an anterior rectocele (white arrow).

Fig. 2. MRI defecography.

Fig. 3. CT scan showing pneumoretroperitoneum at the level of the mesorectum, kidneys, and also mediastinal (white arrows). The contrast enema revealed no anastomotic leak and hence no evidence of a staple-line dehiscence (red arrows).

stitute. Due to the expected scarring in the region of the rectovaginal septum after the posterior colporrhaphy mentioned above, it was decided to adjourn the procedure until a year had passed since the last operation.

A STARR procedure with a Contour® Transtar™ curved cutter stapler (Ethicon Endo-Surgery; Cincinnati, OH, USA) was performed without any intraoperative difficulties or complications nearly 1 year after the anterior and posterior colporrhaphy. No staple-line dehiscence or spiraling was encountered intraoperatively. The patient received perioperative intravenous single-dose prophylaxis of 1.5 g cefuroxime and 0.5 g metronidazole. On day 1 after surgery, the patient reported lower abdominal pains. Ultrasound showed urinary retention and bladder overflow which was managed with a transurethral catheter. Rectal examination showed an intact staple line. Vaginal examination revealed an intact posterior vaginal wall. On day 2 after surgery, a rise in her white blood cell count (WBC) to 10,300/ μ L, and a C-reactive protein (CRP) level of 161.9 mg/L was detected. Her body temperature was measured at 38 °C. Rectal examination revealed no pathology. There was no abdominal discomfort or tenderness. Abdominal ultrasound was normal. Oral antibiotics using cefuroxime 0.5 g b.i.d. and metronidazole 0.4 g b.i.d. were started and set for a 7-day-course of therapy. On day 3, and upon recording a persistent body temperature of 38 °C and a CRP of 170 mg/L, a CT scan was performed. This revealed pneumoretroperitoneum at the level of the mesorectum, along the aorta and the kidneys, and up to the mediastinum. No anastomotic leak was observed upon transanal injection of water-soluble contrast (Fig. 3). There was no intra-abdominal free air or fluid. We decided to do a diagnostic laparoscopy and inspect the staple line under general anesthesia. The laparoscopy did not reveal any pathologies. A drain was brought into the Douglas pouch. The rectal examination under general anesthesia confirmed an intact staple line with no signs of dehiscence, bleeding, or ischemia. Vaginal examination revealed an intact mucosa.

Table 1. A short review of publications describing retroperitoneal air following trananal stapling procedures

First author [ref.], year	Publication type	Stapling device used	Summary and outcome
Molloy [12], 2000	case report	PPH03	Pneumoretroperitoneum and pelvic sepsis with an intact staple line after stapled hemorrhoidectomy. Laparotomy and fecal diversion. Survived.
Bönnner [13], 2001	case report	PPH03	Sepsis, staple-line dehiscence, and Fournier gangrene after stapled hemorrhoidectomy. Fecal diversion and wide perineal and perianal excision. Died.
Maw [14], 2002	case report	PPH03	Retroperitoneal sepsis with intact staple line after stapled hemorrhoidectomy. Conservative medical treatment. Survived.
Ripetti [4], 2002	case report	PPH03	Pneumoretroperitoneum and pneumomediastinum after stapled hemorrhoidectomy. Fecal diversion. Survived.
Delgadillo [7], 2007	case report	PPH03	Pneumoretroperitoneum after stapled hemorrhoidectomy. Intact staple line. Conservative medical treatment. Survived.
Filingeri [15], 2005	case report	PPH03	Pneumoretroperitoneum and pneumomediastinum with staple line dehiscence after stapled hemorrhoidectomy. Suturing of the staple line followed. Survived.
Schulte [8], 2008	case report, letter to the editor	Contour Transtar™	Pneumoretroperitoneum and pneumomediastinum after the STARR procedure for obstructed defecation syndrome with the Contour Transtar stapler. Conservative medical treatment. Survived.
Gagliardi [3], 2008	case series, retrospective analysis	(1) PPH01 (2) PPH01	(1) Pneumoretroperitoneum with intact staple line after the STARR procedure for obstructed defecation. Conservative medical treatment. Survived. (2) Pneumoretroperitoneum with necrotizing pelvic fasciitis and necrosis of the rectum and uterus. A Hartmann procedure followed. Died.
Naldini [9], 2011	case series	PPH01	Pneumoretroperitoneum with perineal sepsis. Hysterectomy and oophorectomy followed. Died.

The WBC count and CRP normalized over the following 6 days. No fever was recorded. There was no abdominal discomfort or tenderness. The patient had normal bowel movements. She was discharged on day 10 after the initial surgery. Specimen pathology revealed no specificities and no presence of peritoneal tissue.

At follow-up nearly 4 months after surgery, the patient reported normal and regular passage of stools with no need for laxatives. The rectal examination revealed no signs of a rectocele or intussusception.

Discussion

The efficacy and safety of the STARR procedure using the Contour Transtar curved cutter stapler to treat ODS in the presence of a rectocele and/or intussusception have been supported by several prospective trials, including randomized trials and meta-analyses [1, 5]. The randomized controlled trials reported in these meta-analyses did not find significant differences regarding the complication rates when the Contour Transtar was compared to STARR performed with circular staplers like PPH01 (Ethicon Endo-Surgery).

The patient we present here had undergone a transvaginal correction of her rectocele and cystocele 1 year prior to the STARR procedure to treat her worsening ODS. We could not identify clinical trials in the literature directly comparing the STARR procedure with a poste-

rior colporrhaphy. There is only one publication that tries to compare the pros and cons of both approaches in terms of benefits and complications according to the available literature [6]. It has been suggested that the transvaginal approach offers better anatomical results, but that the transanal approach achieves better rectal function. However, in our opinion, this statement remains evidence-based when one considers the obvious lack of evidence. Furthermore, we have not been able to identify a similar reported case in the literature where a STARR procedure was performed in a patient who had previously undergone a posterior colporrhaphy.

Pneumoretroperitoneum after transanal stapling procedures, performed for treating hemorrhoidal prolapse or ODS, has been described in several publications [3]. In some case reports, the condition was described as oligo-symptomatic with no evidence of staple-line defects, and was treated conservatively with antibiotics [7, 8]. More severe cases have been described in the literature, ranging from rectal perforation [4] to fatal necrotizing pelvic fasciitis [3, 9]. The management of these complications ranged from conservative treatment with antibiotics to laparotomy and fecal diversion (Table 1).

In our patient, the pelvic-floor MDT at our institute was reluctant to approve a surgical approach, either transanal or laparoscopic, due to the expected presence of scarring in the rectovaginal septum from previous posterior

colporrhaphy. This ultimately led to a postponement of the indicated STARR procedure for a year, during which all conservative measures of treatment were exhausted. Laparoscopy, synchronous to the STARR procedure, was not indicated due to the absence of a coexisting enterocele.

There have been suggestions in the literature to perform stapled transanal rectal resections under laparoscopic surveillance in the presence of a coexisting enterocele to avoid small bowel entrapment in the staple line [10]. One retrospective study suggested that a concomitant enterocele was not associated with an increased risk of inadvertent entrapment of the small bowel in the staple line if the enterocele was only visible during the straining phase of a defecography [11]. This same study revealed, however, that 60% of the resected specimens contained peritoneal tissue, which indicated capturing of the peritoneal cavity with the stapling device. The authors thus recommended performing a synchronous laparoscopy during a STARR procedure only when there is a stable enterocele.

A concomitant enterocele was ruled out in our case via pelvigraphy and MRI defecography. Furthermore, specimen pathology did not reveal any specificities or the presence of peritoneal tissue in the staple line. Even though we were not able to confirm a dehiscence or indeed any defect in the anastomosis, we suspect that the presumed scarring at the level of the rectovaginal septum might have contributed to a suboptimal closure of the staple line introduced by the Contour Transtar™, which resulted in a pneumoretroperitoneum in terms of air infiltration or seepage of bacteria through the staple line.

Conclusion

Even though the STARR procedure using the Contour Transtar curved cutter stapler is considered safe and effective for treating ODS, serious complications have to be considered and expected, particularly when the procedure is performed at a potentially scarred location following previous surgery. Furthermore, the fact that the pelvic-floor MDT team anticipated complications in this particular case beforehand highlights the importance of an interdisciplinary approach for management.

Statement of Ethics

Our case report was approved by the Ethics Committee of the St. Marienkrankenhaus Siegen. The patient gave written informed consent to publish this case report with the accompanying data and images.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

I.D. treated the patient, collected the follow-up data, and designed, wrote, and revised the manuscript. B.M. treated the patient and revised the manuscript. S.D.-D. treated the patient and revised the manuscript. F.W. critically revised the report for intellectual input and gave final approval of the version to be published.

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