

Laparoscopic treatment of a mature teratoma with a fistula into the rectum — a NOTES technique

Marek Rzaca, Wojciech Witkiewicz[✉], Ewa Milnerowicz-Nabzdyk[✉]

Regional Specialized Hospital in Wrocław, Poland

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INTRODUCTION

Teratomas are common, mostly asymptomatic benign tumors with an incidence rate of 10%–30% [1, 2]. Perforated teratomas with subsequent formation of a fistula into adjacent organs are extremely rare [3]. Fistulas most often connect to the bladder, ileum, sigmoid, transverse colon, and rectum. Gastrointestinal symptoms such as diarrhea/hemodiarrhea, fatty stools with or without hairs, and the massive expulsion of gases suggest perforation to the large bowel. So far, 45 perforated teratomas have been described (Tab. 1) [4]. Pre-operative diagnosis of malignant transformation is supported by the presence of risk factors (age > 45 years, tumor size of > 10 cm, elevated tumor markers) [5]. Computer tomography (CT) and magnetic resonance imaging (MRI) are recommended to detect teratomas and estimate possible complications (torsion, rupture, malignant transformation) [2].

CASE

In a 49-year-old woman experiencing abdominal pain, hemodiarrhea and the discharge of hairs in her stool, a CT scan detected a thick-wall cyst (7.8 × 7.4 × 7.3 cm), with fluid and air bubbles inside, located in the left adnexa. The cyst was adherent to the rectum on a length of 6 cm. Typical criteria and the presence of calcified tooth-like formations suggested teratoma. Inflammation of the surrounding fatty tissue was seen, but no enlarged lymph nodes in the pelvis were found. During a colonoscopy, an 11 mm fistula to the anus with passage of hairs through the fistula was detected. CA 125 and other blood parameters were normal, but CRP was elevated. Preoperatively, mature teratoma perforated to the rectum was suspected. Surgery plan included a total laparoscopic hysterectomy (TLH); tumor resection; resection of the rectum wall damaged by perforation; transvaginal extraction of the specimen and transanal laparoscopic anastomosis.

During surgery (Supplementary Video), we found a 10 cm tumor, strictly adherent to the pelvic sidewall laterally, the uterus and broad ligament of the uterus posteriorly, and the sigmoid and rectum inferiorly. First, the tumor was dissected from the sidewall (Fig. 1A) and separated from the uterus. The left broad ligament of the uterus and left proper ovarian ligament was coagulated and cut. The same was done with the left round ligament of the uterus and salpinx. TLH with the bilateral adnexectomy was performed. The uterus and the tumor were removed through the vagina (Fig. 1 B). The superior rectal vessels were separated from the mesosigmoid, and then clipped and cut. Partial resection of the sigmoid and upper part of the rectum with the fistula was carried out using a linear stapler (Fig. 1C). The fistula opening was found 15 mm from the distal margin of the resected rectum. The resection of the sigmoid colon was done extracorporeally. The part of the bowel with fistula planned to resection was removed from the abdominal cavity through the vagina, and the proximal margin of the resected bowel was established due to the limit of the proper vascularization of the bowel. Then a segment of the bowel with fistula was cut out of the vagina, and the anvil of the circular stapler was fixed in the saved part of the sigmoid colon. The anvil was introduced into the abdomen through the vagina. The transanal anastomosis of the distal (rectal) and proximal (sigmoid) part of the bowel with the fixed anvil was done intracorporeally (Fig. 1D). Finally, the vagina was sutured. No bowel leakage was detected post-surgery. A histopathological examination confirmed a mature teratoma of the left ovary; in the right ovary — an adenomatoid tumor of 5 mm in diameter; in the resected bowel of the length of 10 cm — inflammation, hemorrhage, fibromatosis in the para-bowel tissue and the wall of the bowel. Two lymph nodes with signs of chronic reactive inflammatory changes were harvested. No complications occurred in the short- and long-term after surgery. The patient returned to full health and social life.

The presentation of this case shows that laparoscopy is equally useful as laparotomy for the treatment of pathologies of the genital and intestinal tract. It allows for perfect visualization and good access to all spaces in the abdomen and pelvis. Laparos-

Corresponding author:

Ewa Milnerowicz-Nabzdyk

Regional Specialized Hospital in Wrocław, 73a H. Kamieńskiego St, 51–124 Wrocław, Poland

e-mail: ewa.milnerowicz@wp.pl

copy minimizes trauma but ensures a similar level of radicality as laparotomy. Furthermore, cooperation between surgeons and gynecologists in complicated pathologies, such as the case presented, here is of high importance.

Table 1. Reported cases of ovarian teratoma complicated with fistula formation (updated and adapted from Kizaki et al. [4])

Author	Age	Symptoms	Organs	Urgent	Approach	Method	Cause of fistula
Park; Endoscopy 2006; 38 Suppl 2: E36	41	Intermittent abdominal pain during defecation	Sigmoid colon	no	LT	Right adnexectomy, anterior resection of rectum	IF
Wickremasinghe; Ceylon Med J 2010; 55: 133	39	Abdominal pain, hematochezia	rectum	no	LT?	Resection of left ovary, anterior resection of rectum	IF
Singh; Endoscopy 2012:44 Suppl 2 UCTN: E260.	23	Abdominal pain, hairs in urine and stools	Rectum, bladder	no	LT	Excision of cyst, closing of bladder and colon defect	IF
Chong; World J Gastroenterol 2011; 17: 3659	85	Severe pain, fever Constipation, weight loss in past 6 months	Sigmoid, colon	yes	LT	Explorative	MAL
Atalay; Gynecol Obstet Invest 2015; 80: 64	20	Foul-odor groin and flank pain	Cutaneous in low abdomen	no	LAP Conv LT	Excision of cyst, closing fistula	IF
Kim; Obst Gynecol Sci 2017; 60: 383	17	Afebrile, abdominal tenderness	Middle rectum	no	LAP	Enucleation of cyst, closing fistula	IF
The present case; 2018	47	Hairs in fatty stools	Rectum	no	LAP	TLH, anterior resection of rectum	IF

IF — inflammation; MAL — malignant; Conv — conversion to; LT — laparotomy; LAP — laparoscopy; TLH — total laparoscopic hysterectomy

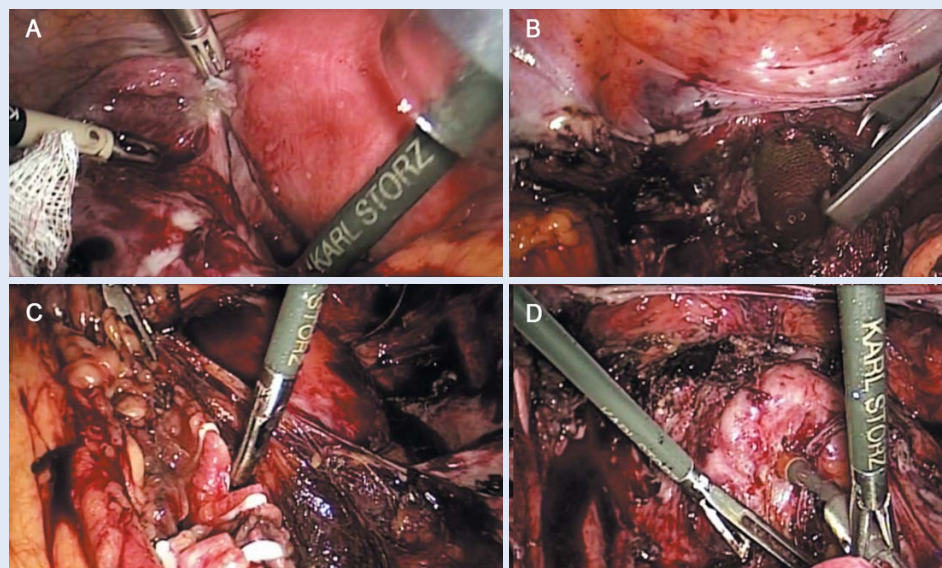


Figure 1. Laparoscopic procedure. **A** — dissection with resection of dermoid cyst; **B** — extraction of the uterus through the vagina; **C** — bowel resection; **D** — end-to-end bowel reconstruction

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