

Ileal pouch anal anastomosis leak after restorative proctocolectomy without protective stoma successfully treated with endoscopic vacuum therapy

Authors' Contribution:

A – Study Design
B – Data Collection
C – Statistical Analysis
D – Data Interpretation
E – Manuscript Preparation
F – Literature Search
G – Funds Collection

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Article history: Received: 5.08.2019 Accepted: 16.10.2019 Published: 18.10.2019

ABSTRACT:

Aim: An ileal pouch anal anastomosis (IPAA) leak is one of the most severe complications after restorative proctocolectomy (RPC). We present a rare case of successful management of IPAA leak after RPC without defunctioning stoma with the use of endoscopic vacuum therapy.

Methods: A 57-year-old male with an ileal pouch anal anastomosis leak after RPC due to ulcerative colitis with a presacral abscess was qualified for endoscopic vacuum therapy (EVT). The abscess of the left buttock was drained and secured with suction drain (redon drain). Due to the lack of defunctioning stoma, a system to contain and divert fecal matter was placed within an afferent limb of the J-pouch and EVT was placed directly within IPAA dehiscence. EVT was changed every third day.

Results: The patient underwent a total of five EVT sessions. Improvement of patient's general condition characterized with a lack of pelvic pain, fever and reduction of inflammatory markers was achieved. Locally, anastomosis dehiscence was healed with prominent reduction in the defect's dimension, contraction and revascularization. Based on imaging studies no chronic presacral sinus or any other perianal disturbances were revealed in the five-month follow-up.

Conclusions: EVT is a promising method for management of IPAA leak. Although it remains extremely difficult, EVT may serve as a method of choice in early pouch-related septic complications after RPC performed without defunctioning stoma.

KEYWORDS:

anastomotic leakage, endoscopic vacuum therapy, negative pressure wound therapy, restorative proctocolectomy

ABBREVIATIONS

CRP – C-reactive protein
CT – computed tomography
EVT – endoscopic vacuum therapy
IPAA – ileal pouch anal anastomosis
MRI – magnetic resonance imaging
NPWT – negative pressure wound therapy
PCT – procalcitonin
RPC – restorative proctocolectomy
UC – ulcerative colitis
WBC – leukocytosis

INTRODUCTION

Restorative proctocolectomy (RPC) with ileal pouch anal anastomosis (IPAA) is a current gold standard of surgical management for ulcerative colitis (UC). Introduced in 1978 to surgical practice, restorative proctocolectomy with IPAA remains a technically demanding procedure with various potential intraoperative, postoperative and reoperative complications. Anastomosis dehiscence is one of the most severe complications and the incidence of pelvic sepsis after ileo-anal pouch formation affects up to 15% of patients [1].

The introduction of negative pressure wound therapy (NPWT) for surgical management in the late 90s revolutionized the strategy in chronic and complex wounds [2]. Currently, NPWT is widely used

in many clinical indications with various positive effects of negative pressure on wound healing [3]. In 2008, Weidenhagen et al. successfully used a novel salvage technique – endoscopic vacuum therapy (EVT) for anastomotic leak after rectal resection [4]. Since then, EVT has been implemented as a method of choice in many clinical scenarios regarding anastomotic leak with a high success rate ranging from 56% to 100% [5].

European evidence-based consensus on surgery for ulcerative colitis patients suggests defunctioning stoma at the time of pouch formation to reduce the risk for IPAA leakage [6]. However, in a selected group of patients, especially in terms of technical intraoperative considerations, temporary ileostomy may be avoided.

We present a rare case of successful management of IPAA leak after RPC without defunctioning stoma with the use of endoscopic vacuum therapy.

CASE REPORT

A 57-year-old male underwent standard two-stage RPC. First, colectomy had been performed eight months earlier due to refractory ulcerative colitis with terminal ileostomy. Next, he was qualified for a second stage of RPC.

RPC was performed in a standard manner. The excision of the rectum and J-pouch formation with IPAA were carried out. The J type of pouch was performed with stapled IPAA. Due to a short ileal



Fig. 1. CT sagittal scan showed a presacral abscess (marked with arrow) before EVT management.



Fig. 2. Design of EVT. Polyurethane foam sutured over a naso-gastric tube.

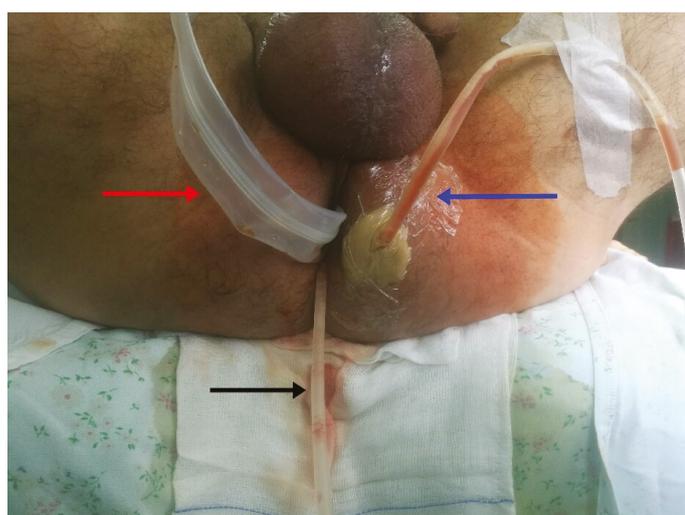


Fig. 3. Intraoperative view of EVT (black arrow), redon drain (blue arrow) and system to contain and divert fecal matter (red arrow).

mesentery and quite a thick anterior abdominal wall as well as no previous steroid regimen and general good condition, defunctioning stoma was not performed. We did not observe any technical problems during surgery. Intraoperative leak testing (air test and methylene blue test) was performed to identify mechanically in-

sufficient anastomosis and the result was negative. Proximal and distal anastomotic rings were examined for integrity and they were complete. Abdominal drain was placed within the pelvis.

On the 4th postoperative day, the patient suffered from perianal and left buttock pain. Based on a US scan, a small fluid collection, approximately of 2.5 cm in size, at the level of the anal verge was revealed, which drained towards the left buttock. Piperacillin and tazobactam were introduced as an empiric antibiotic regimen intravenously. Due to persistent perianal pain and elevated blood serum C-reactive protein (CRP), procalcitonin (PCT) and leukocytosis (WBC), endoscopic evaluation was made. Based on that, a dehiscence of the left-posterior internal circumference of IPAA was diagnosed. A CT scan revealed a peri-J-pouch abscess within IPAA drained posteriorly to the sacral bone (Fig. 1.). The patient remained in a relatively good general condition. Total parenteral nutrition was administered. Decompression of the upper GI tract was initiated and antibiotic regimen was continued. Because of the above mentioned technical problems during index surgery (short ileal mesentery and quite a thick anterior abdominal wall), there were no potential possibilities for defunctioning stoma, and so the patient was qualified for endoscopic vacuum therapy. The procedure was performed in general endotracheal anesthesia. The abscess of the left buttock was drained and secured with suction drain (redon drain). Within the afferent limb of the J-pouch, a system to contain and divert fecal matter (Flexi-seal Signal, Convatec, Poland) was placed. Finally, a polyurethane (PU) foam was trimmed to an appropriate size of the anastomotic dehiscence and fixed with non-absorbable sutures over the naso-gastric tube (Fig. 2.). PU foam was lubricated with lidocaine gel to facilitate introduction through the anal canal and placed directly within IPAA dehiscence. All drains and intraluminal devices were secured using a stoma paste (Stomahesive, Convatec, Poland) and an adhesive dressing to keep the system sealed (Fig. 3.).

EVT was changed every third day or on demand in case of an unsealed system. With every EVT change, PU foam was trimmed to be smaller in size than the previous PU foam. At every EVT session, patient was evaluated endoscopically for progressive wound contraction. Patient's improvement of general condition was observed together with a reduction in CRP, WBC and PCT levels (Tab. I.). Based on an endoscopic evaluation, a reduction in purulent content and dimension of the fistula cavity were obtained. A total of five EVT sessions were performed. Since inflammatory markers had a tendency to be reduced, no perianal pain was reported, and liquid diet was introduced with a good clinical response. Constant improvement in both clinical and endoscopic evaluation was obtained, which was confirmed with imaging studies. Patient was discharged on the 23rd postoperative day. Since then, patient was monitored every month with no complaints of pain, urgency, fever or impaired bowel movement. Based on a recent MRI performed three months after EVT was accomplished, no sacral sinus was observed or any remnant of fluid collection (Fig. 4.).

DISCUSSION

The anastomotic leak after IPAA is reported in 5% to 18% [7]. The most common sites of early anastomotic leak after RPC are IPAA site and the tip of the J-pouch. As a result of anastomotic leak, pelvis abscess is reported in 34% of patients with a mortality rate

Tab. I. Blood serum C-reactive protein (CRP), procalcitonin (PCT) and leukocytosis (WBC) during endoscopic vacuum therapy (EVT).

EVT	NO.1		NO.2		NO.3		NO.4		NO.5									
Postop. Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CRP (mg/L)		72			27	61	345	296	223	97	55	48	54	44	33	38	39	40
PCT (ng/mL)									0.44	0.28	0.18	0.11			0.07		0.06	
WBC (x10 ³ /μL)		10					16	15	14	12	10	11	13	10	10	11	6	7

of 3% [8]. Anastomotic tension and bowel ischemia are the most common risk factors for IPAA dehiscence. Moreover, as a result of IPAA leak, presacral abscess is usually formed with consequent persisting presacral sinus development. Based on a recent retrospective study, 36% of patients after anastomotic leakage developed chronic presacral sinus [9]. Thus, an early diagnosis of anastomotic dehiscence and appropriate management are crucial to minimize serious pelvic complications, fibrosis and impaired bowel and pouch function.

Although there are no firm conclusions and algorithms for IPAA leak management, the first-line treatment includes: drainage, bowel rest or fecal diversion and broad-spectrum antibiotic regimen. Recently, endoscopic salvage therapy using stents, endoscopic clips, fibrin glue and endoscopic vacuum therapy has been widely used as a method of choice regarding the anastomotic complication. One of the promising strategies for anastomotic leak is endoscopic vacuum therapy. It facilitates constant drainage and increases blood flow which influences granulation of the peri-anastomotic defect [10]. Moreover, it decreases bacterial contamination and reduces the cavity size due to the mechanical properties of EVT [11]. The EVT was successfully used in colorectal anastomotic leak and included: rectal anastomotic leak, rectal stump insufficiency, iatrogenic or traumatic rectal perforation, transanal endoscopic microsurgery, anastomotic leakage after stapled transanal rectal resection and others [5, 12]. Recently, Rottoli et al. analyzed the outcomes of the utility of EVT in IPAA leak without any additional surgical operations [13]. The IPAA leak was healed in all patients after a median of 60 days of treatment. Van Koperen et al. described two patients successfully treated with EVT after IPAA leak [14]. However, both mentioned above authors used EVT in patients who had a defunctioning ileostomy performed routinely at the time of pouch formation or who underwent emergency diversion ileostomy. Gardenbroek et al. presented two patients with EVT management without defunctioning stoma [15]. Complete healing of the leak was achieved in one patient, whereas the second one required formation of ileostomy. Mennigen et al. presented one patient without ileostomy with a presence of a presacral abscess successfully treated with EVT [16].

Defunctioning ileostomy at the time of RPC reduces the risk for clinical leakage by 50% [6]. Based on recent ECCO recommendations, temporary loop ileostomy may be avoided in a selected group of patients [6].

REFERENCES

- Worley G.H.T., Segal J.P., Warusavitarne J., Clark S.K., Faiz O.D.: Management of early pouch-related septic complications in ulcerative colitis: a systematic review. *Colorectal Dis.*, 2018; 20(8): O181–O189.
- Fleischmann W., Strecker W., Bombelli M., Kinz L.: Vacuum sealing as treatment of soft tissue damage in open fractures. *Unfallchirurg.* 1993; 96(9): 488–492.
- Back D.A., Scheuermann-Poley C., Willy C.: Recommendations on negative pressure wound therapy with instillation and antimicrobial solutions – when, where and how to use: what does the evidence show? *Int Wound J.* 2013; 10(Suppl. 1): 32–42.
- Weidenhagen R., Gruetzner K.U., Wiecken T., Spelsberg F., Jauch K.W.: Endoscopic vacuum-assisted closure of anastomotic leakage following anterior resection of the rectum: a new method. *Surg Endosc.* 2008; 22: 1818–1825.
- Kuehn F., Janisch F., Schwandner F., Alsfasser G., Schiffmann L. et al.: Endoscopic Vacuum Therapy in Colorectal Surgery. *J Gastrointest Surg.* 2016; 20(2): 328–334.
- Oresland T., Bemelman W.A., Sampietro G.M., Spinelli A., Windsor A. et al.: European Crohn's and Colitis Organisation (ECCO). European evidence based consensus on surgery for ulcerative colitis. *J Crohns Colitis.* 2015; 9(1): 4–25.

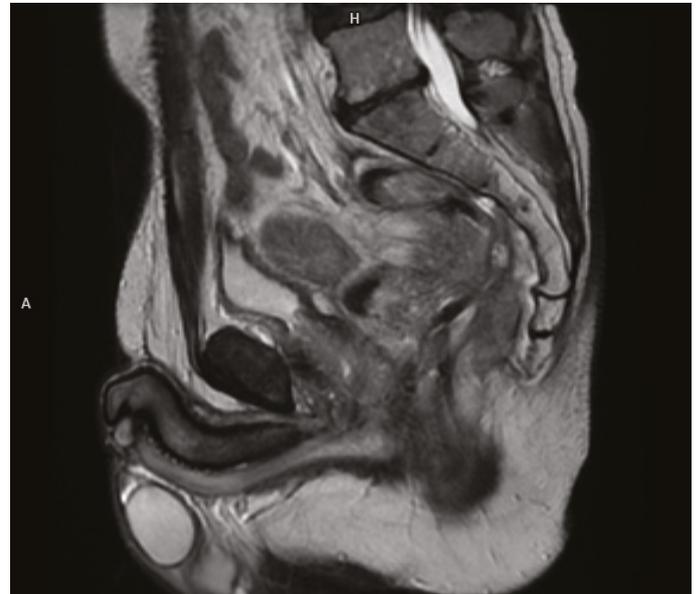


Fig. 4. MRI sagittal scan showed no presacral sinus or any other fluid collection within the pelvis after EVT management.

Recently, it has been firmly confirmed that pouch-related septic complications increase the risk of pouch dysfunction and failure, especially in those without defunctioning stoma formation [1]. The IPAA leak without defunctioning stoma is an extremely difficult clinical scenario for surgical management. In this study, we presented a case of IPAA leak associated with a presacral abscess successfully treated with EVT. Although the treatment is associated with a potential failure, early diagnosis and quick EVT introduction with bowel rest, antibiotic regimen and fecal diversion with specially designed devices may, in our opinion, be effective in the treatment of locally contained IPAA leakage.

CONCLUSIONS

EVT is a promising method for management of IPAA leak. Although it remains extremely difficult, EVT may serve as a method of choice in early pouch-related septic complications after RPC performed without defunctioning stoma.

7. Gorgun E., Remzi F.H.: Complications of ileoanal pouches. *Clin Colon Rectal Surg*, 2004; 17(1): 43–55.
8. Sagap I., Remzi F.H., Hammel J.P., Fazio V.W.: Factors associated with failure in managing pelvic sepsis after ileal pouch-anal anastomosis (IPAA) – a multivariate analysis. *Surgery*, 2006; 140(4): 691–703.
9. van Koperen P.J., van der Zaag E.S., Omluo J.M., Slors J.F., Bemelman W.A.: The persisting presacral sinus after anastomotic leakage following anterior resection or restorative proctocolectomy. *Colorectal Dis.*, 2011; 13(1): 26–29.
10. Leeds S.G., Mencio M., Ontiveros E., Ward M.A.: Endoluminal Vacuum Therapy: How I Do It. *J Gastrointest Surg.*, 2019; 23(5): 1037–1043.
11. Schmidt F., Mennigen R., Vowinkel T., Neumann P.A., Senninger N. et al.: Endoscopic Vacuum Therapy (EVT)-a New Concept for Complication Management in Bariatric Surgery. *Obes Surg.*, 2017; 27(9): 2499–2505.
12. Mencio M.A., Ontiveros E., Burdick J.S., Leeds S.G.: Use of a novel technique to manage gastrointestinal leaks with endoluminal negative pressure: a single institution experience. *Surg Endosc.*, 2018; 32(7): 3349–3356.
13. Rottoli M., Di Simone M.P., Vallicelli C., Vittori L., Liguori G. et al.: Endoluminal vacuum-assisted therapy as treatment for anastomotic leak after ileal pouch-anal anastomosis: a pilot study. *Tech Coloproctol.*, 2018; 22(3): 223–229.
14. van Koperen P.J., van Berge Henegouwen M.I., Slors J.F., Bemelman W.A.: Endo-sponge treatment of anastomotic leakage after ileo-anal pouch anastomosis: report of two cases. *Colorectal Dis.*, 2008; 10(9): 943–944.
15. Gardenbroek T.J., Musters G.D., Buskens C.J. et al.: Early reconstruction of the leaking ileal pouch-anal anastomosis: a novel solution to an old problem. *Colorectal Dis*, 2015; 17: 426–432.
16. Mennigen R., Senninger N., Bruewer M. et al.: Pouch function and quality of life after successful management of pouch-related septic complications in patients with ulcerative colitis. *Langenbeck's Arch Surg*, 2012; 397: 37–44.

Liczba słów: 2240

Liczba stron: 5

Tabele: 1

Ryciny: 4

Piśmiennictwo: 16

DOI: 10.5604/01.3001.0013.5357

Table of content: <https://ppch.pl/issue/13166>

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Competing interests: The authors declare that they have no competing interests.



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Cite this article as: Borejsza-Wysocki M., Bobkiewicz A., Koscinski T., Banasiewicz T., Krokowicz L.: Ileal pouch anal anastomosis leak after restorative proctocolectomy without protective stoma successfully treated with endoscopic vacuum therapy; *Pol Przegl Chir* 2020; 92 (4): 58-62

