



CASUISTIC PAPER

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Crohn's disease – a case study

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ABSTRACT

Introduction. Surgical treatment of patients with Crohn's disease can be a big challenge, due to the high risk of complications that is associated with chronic inflammatory process, immunosuppressive, biological treatment, malnutrition, patient's wasting or prone to recurrence of inflammatory changes.

Aim. The aim of this work is to present the case of patient underwent surgery, resection of the terminal ileum, right hemicolectomy and segmental jejunum resection.

Description of the case. In this case patients with Crohn's disease were accompanied by progressive nutritional deficiencies and cachexia.

Conclusion. Crohn's disease can lead to very severe abdominal and septic complications that require long-term treatment, repeated surgery, and open belly therapy with the use of vacuum therapy

Keywords. biological treatment, Crohn's disease, inflammatory process

Introduction

Crohn's disease is a chronic, non-specific inflammatory process in which changes can affect any part of the gastrointestinal tract from the mouth to the anus, the changes are segmental (healthy sections occur between the diseased sections), asymmetrical and full-walled. Despite the advances in conservative and pharmacological treatment, most patients require surgery at some point during the disease.¹⁻³ The need for surgery is 10-14% during the year and 18-35% during the 35 years of the disease.

Indications for surgical treatment can be divided into:

1. urgent (intestinal obstruction, perforation of the intestine with peritonitis, bleeding, fulminant disease not subject to pharmacological treatment, intra-abdominal or perianal abscess causing sepsis)

2. planned (symptoms of chronic intestinal obstruction, chronic disease symptoms causing disability, intra-abdominal abscesses and fistulas resulting in malabsorption syndrome, intestinal epithelial dysplasia or cancer).

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From 5-15% of patients have entero-enteral fistulas. Operations of patients with Leśniowski- Crohn's disease are at increased risk of complications and relapses. Surgical treatment in Crohn's disease can be a big technical challenge for a surgeon due to chronic inflammation, biological treatment, immunosuppression, cachexia, patient malnutrition, or a tendency to relapse inflammation.⁴⁻⁷ Leakage, anastomosis dehiscence, abscess or fistula are life-threatening complications requiring reoperation and intensive treatment in the Intensive Care Clinic. Open abdomen treatment is a method of treating patients with severe septic peritonitis and the risk of abdominal compartment syndrome. Providing patients with OA is a challenge, it is associated with massive loss of fluid, electrolytes and protein, a high risk of infection, bleeding, obstruction or perforation of the intestine, as well as frequent multi-organ failure and high mortality.⁸⁻¹² Abdominal decompression can cause peritoneal adhesions, fistulae formation, fascia contraction and large postoperative hernias requiring abdominal wall reconstruction. It is rational to treat the open abdominal cavity as an open abscess. There are various ways of temporary abdominal closure. Initially, their task was to cover the internal organs (closing the skin itself, "Bogota bag", sewing the zipper), now, in addition to visceral covering, TAC allows exudate control and approaching the edges of the wound - negative pressure wound therapy.¹³⁻¹⁵

Aim

This work aimed to present 10 years follow up for clinical case diagnosed a 29-year-old patient with Crohn's disease.

Description of the case

A 29-year-old patient with Crohn's disease diagnosed in 2009, treated for many years with azathioprine and me-

salazine during periods of exacerbation with glucocorticoids. He did not take medicine for a year to March 2019. From March 2019 to April, 2019, hospitalized in the Gastroenterology Clinic, to which he was admitted due to abdominal pain accompanied by intestinal passage disorders. After performing additional tests, anemia with low iron levels, low protein, albumin, vitamin D levels was found, according to the SGA scale, nutritional status was assessed as severe malnutrition (body weight 52kg, height 175cm, BMI 16.98), increased inflammatory parameters. Gastroscopic examination no pathological changes, colonoscopy found active inflammatory changes in the caecum and obliterated ileocecal valve orifices. Magnetic resonance imaging (MRI) of the abdomen and pelvis were performed revealed the thickening of the walls of the cecum and the ascending colon and the ileocecal valve area with a slight fluid reaction in the environment - inflammatory lesions and the perianal fistula canal (Figure 1). The treatment used empiric antibiotic therapy, systemic glucocorticosteroids, total parenteral nutrition. The patient was then transferred for surgical treatment to the Surgery Clinic. After preparation, a laparotomy was performed. Intraoperatively, inflammatory changes were found with thickening of the terminal wall of the ileum with stenosis, thickening of the caecum wall and fistula features between the jejunum loop and ascending colon. Right hemicolectomy with ileo-transverse mechanical anastomosis and jejunal segment resection with mechanical anastomosis were performed.

On the 4th day after surgery, the patient's condition deteriorated significantly, which was accompanied by tachycardia, fever and a significant increase in inflammatory parameters, in ultrasound a large amount of liquid content with increased echogenicity. Relaparotomy was performed, diffuse fecal peritonitis was found due

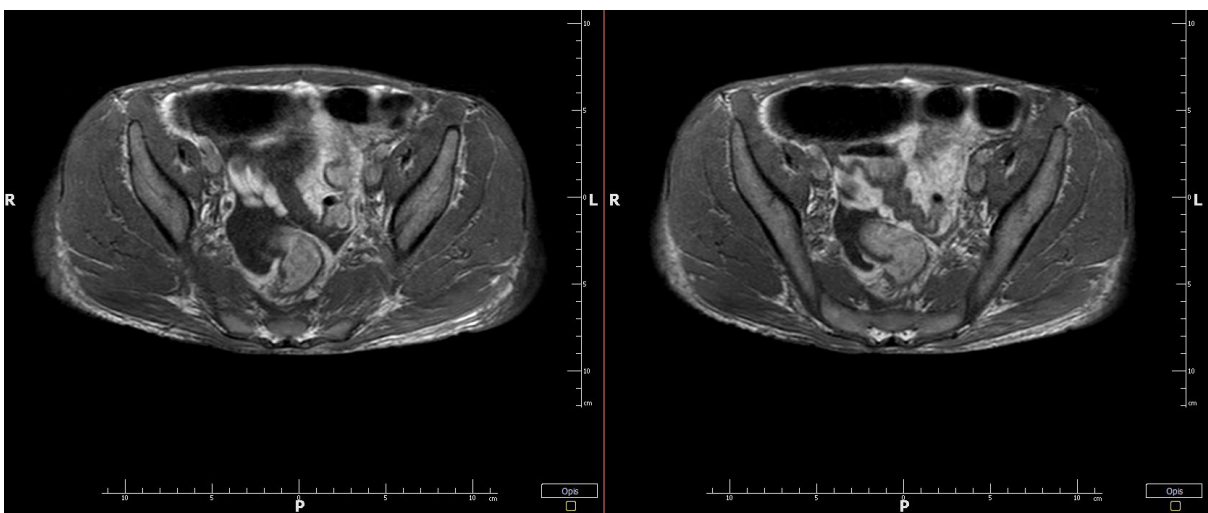


Fig. 1. An MRI Image of the abdomen and pelvis revealed the thickening of the walls of the cecum and the ascending colon and the ileocecal valve area with a slight fluid reaction in the environment - inflammatory lesions and the perianal fistula canal.

to complete separation of ileo-transverse anastomosis, jejunum anastomosis normal without signs of leakage. The abdominal cavity was closed after putting on three drains. In the tenth day after the first surgery, there was an erection, a partial wound separation of the coatings. The patient was qualified for surgery. Intraoperatively, features of fibrinous purulent peritonitis with leakage of the small intestinal anastomosis were found. A fragment of the stapler anastomosis was excised, the abdomen was left open using negative pressure wound therapy.

In the thirteenth day after the first surgery, during replacement of the vacuum dressing, complete separation of the transverse stump and complete separation of the ileostomy from the coatings, jejunum anastomosis was found. Excision of the spleen and descending colon with sigmoid closure by hand suture was performed, fixation sutures for ileostomy were reapplied. The abdomen was left open (open abdomen) using vacuum therapy. The patient was in the Intensive Care Clinic. Due to respiratory failure, pleural puncture was performed, followed by vacuum drainage into the pleural cavity (due to iatrogenic pneumothorax). Mechanically ventilated, circulatory stabilized infusion of levonor at a low dose, antibiotic therapy according to culture, antithrombotic prophylaxis (low molecular weight heparin), intravenous feeding - total parenteral nutrition was continued. In the sixteenth day after the first surgery, the replacement of the vacuum dressing, in the abdomen, exudative-fibrinous in-laws, without intestinal contents (no features of intestinal fistulas). XXIII day postoperative replacement of a vacuum dressing granulation tissue without fibrinous-hypotensive content. Sutures were placed approaching the edges of the wound around both poles. XXVII day replacement of a vacuum dressing granulation tissue with no fibrinous-hypotensive content. Two more stitches were placed approaching the wound poles gradual closing by following sewing seams closing to the poles of the Wound. XXXI day abdominal closure (continuous peritoneo-fascial suture, single sutures on the skin). After discharge, the patient stays under the constant care of the Gastroenterology Clinic (biologically treated) and the Surgery Clinic. After half a year, the patient does not want to try to restore the digestive tract.

Discussion

Leakage and dehiscence of the anastomosis cause about 25% of deaths after bowel surgery. Studies show that patients with Crohn's disease have a higher risk of septic complications. Also important are factors related to the surgical technique, end-to-end anastomosis, handsewn anastomosis, positive resection of the intestine, and penetrating form of Crohn's disease.¹⁶⁻²⁰ The resection limits are determined by macroscopically assessing inflammatory lesions on the intestine and assessing the thickness

and mesenteric infiltration (Fazio symptom) - in the place where the mesentery is soft and thin, there should be no lesions. There are many definitions of the complication of anastomotic leak, which is why the frequency of leakage in literature ranges from 0.5 to 30%. When suspecting anastomotic leaks, it is important to control the patient's basic parameters body temperature, tachycardia, leukocytosis, C reactive protein or procalcitonin. Obvious evidence of leakage of the anastomosis is the presence of intestinal contents in the drainage or visible in imaging tests (e.g. ultrasound) fluid content in the peritoneal cavity with increased echogenicity, it is obvious that physical examination - peritoneal symptoms cannot be omitted. Treatment of septic condition resulting from anastomotic leak requires fluid and electrolyte equalization, antibiotic therapy, and surgical intervention. The surgical procedure for finding leaks involves: adding several sutures (77.5%), sealing the anastomosis with "sealants" (17.5%), selecting an ileo- or colostomy (10%) and performing a new anastomosis (9.4%) or combining these procedures. If the leakage is not controlled and the patient manifests the symptoms of peritonitis and septic state, the safest and most common procedure is the emergence of a stoma above the leak, and the defect in the anastomosis is provided with additional sutures and/or local sealing agents (e.g. Tacho-Sil, tissue adhesives). The anastomosis can be resealed by closing the distal intestine and the proximal segment emerging in the form of a final stoma (Hartmann method). In the patient presented above on the 4th day after resection of the ileum fragment with right hemicolectomy, ileo-transverse anastomosis and resection of the jejunum fragment) and small intestinal anastomosis with mechanical suture (two linear staplers), the ileo-transverse anastomosis almost completely. Due to diffuse fecal peritonitis, the distal part of the intestine was closed and the proximal one emerged in the form of a final ileostomy. In the tenth day after the first surgery, the treatment occurred. Intraoperatively, anastomosis of the jejunum anastomosis was found proximal to the ileostomy, a portion of the anastomosis was resected with a linear stapler.¹⁷⁻²³ The abdomen was left open (laparotomy) using a commercial VAC kit for pressure therapy. For a patient in a severe condition with symptoms of abdominal sepsis after a second or subsequent laparotomy, open abdominal therapy is the best solution. Vacuum therapy is currently the most commonly used method of temporary abdominal closure. It is often the case that primary fascia closure (after the end of vacuum therapy) is impossible. Planning for laparostomy closure should start from day one when the surgeon leaves the abdomen open. The edges of the fascia should be approached as soon as possible. Vacuum therapy alone brings the edges of the wound closer together. Various methods are described in the literature to increase the percent-

age of primary fascia closures: Vacuum assisted wound closure and mesh mediated fascial traction, Wittmann Path, dynamic retention suture-DRS. In the present patient, the fascial edges were gradually brought closer by suturing the poles of the wound during subsequent abdominal revisions and replacing the vacuum dressing. Among other things, it was possible to close the fascia originally.²⁴⁻²⁷ After six months of follow-up, no hernia was found in the postoperative scar, which is a common complication following open abdomen treatment. A very important element of the patient's comprehensive treatment was the therapy in the Intensive Care Clinic (mechanical ventilation, circulatory stabilization, antibiotic therapy, parenteral nutrition).

Conclusion

After the original surgery, a number of complications occurred: dissolution of the anastomoses, recurrence of inflammation in fragments of the left intestine, which was accompanied by diffuse fecal peritonitis. The patient was re-operated many times with excision, secondary anastomosis suturing, ileostomy, open abdomen using vacuum therapy. Repeated surgical procedures, intensive therapy in the Intensive Care Clinic led to septic state control, healing of anastomotic leaks and healing of abdominal wall wounds without postoperative hernia.

Leakage, dehiscence of intestinal anastomoses, especially in patients with chronic inflammatory process. Such treatment requires a multi-specialist and comprehensive approach to subsequent complications. Such behavior is a very big challenge, but only such behavior can lead to therapeutic success.

References

1. Caviglia GP, Dughera F, Ribaldone DG, et al. Serum zonulin in patients with inflammatory bowel disease: a pilot study. *Minerva Med.* 2019;110(2):95-100.
2. Stollon N, Zhong Y, Ferris M, et al. Chronological age when healthcare transition skills are mastered in adolescents/young adults with inflammatory bowel disease. *World J Gastroenterol.* 2017; 23(18):3349-3355.
3. Martini E, Krug SM, Siegmund B, Neurath MF, Becker C. Mend Your Fences: The Epithelial Barrier and its Relationship With Mucosal Immunity in Inflammatory Bowel Disease. *Cell Mol Gastroenterol Hepatol.* 2017;4(1):33-46.
4. Bafford AC, Latushko A, Hansraj N, Jambaulikar G, Ghazi LJ. The Use of Temporary Fecal Diversion in Colonic and Perianal Crohn's Disease Does Not Improve Outcomes. *Dig Dis Sci.* 2017;62(8):2079-2082.
5. Hutter S, van Haaften WT, Hünerwadel A, et al. Intestinal Activation of pH-Sensing Receptor OGR1 [GPR68] Contributes to Fibrogenesis. *J Crohns Colitis.* 2018;12(11):1348-1358.
6. Reinglas J, Gonczi L, Kurt Z, Bessissow T, Lakatos PL. Positioning of old and new biologicals and small molecules in the treatment of inflammatory bowel diseases. *World J Gastroenterol.* 2018;24(32):3567-3582.
7. Gavin J, Marino LV, Ashton JJ, Beattie RM. Patient, parent and professional perception of the use of maintenance enteral nutrition in Paediatric Crohn's Disease. *Acta Paediatr.* 2018;107(12):2199-2206
8. Gavin J, Marino LV, Ashton JJ, Beattie RM. Patient, parent and professional perception of the use of maintenance enteral nutrition in Paediatric Crohn's Disease. *Acta Paediatr.* 2018;107(12):2199-2206
9. Thin LWY. Swiss cheese tragedy case study. *J Gastroenterol Hepatol.* 2018;33 Suppl 3:31-32.
10. Cañete F, Mañosa M, Clos A, Cabré E, Domènech E. Review article: the relationship between obesity, bariatric surgery, and inflammatory bowel disease. *Aliment Pharmacol Ther.* 2018; 48(8):807-816.
11. McKenna NP, Bews KA, Behm KT, Mathis KL, Lightner AL, Habermann EB. Do Patients With Inflammatory Bowel Disease Have a Higher Postoperative Risk of Venous Thromboembolism or Do They Undergo More High-risk Operations? *Ann Surg.* 2020;271(2):325-331.
12. Xie F, Fang QH, Bu XN. Clinical features of 12 cases of respiratory diseases associated with inflammatory bowel diseases. *Zhonghua Jie He He Hu Xi Za Zhi.* 2018;41(9):724-727.
13. Richard AC, Peters JE, Savinykh N, Lee JC, Hawley ET, Meylan F, et al. Reduced monocyte and macrophage TNFSF15/TL1A expression is associated with susceptibility to inflammatory bowel disease. *PLoS Genet.* 2018;14(9):e1007458
14. Cantarelli BCF, de Oliveira RS, Alves AMA, Ribeiro BJ, Velloni F, D'Ippolito G. Evaluating inflammatory activity in Crohn's disease by cross-sectional imaging techniques. *Radiol Bras.* 2020;53(1):38-46.
15. Hakim A, Alexakis C, Pilcher J, et al. Comparison of small intestinal contrast ultrasound with magnetic resonance enterography in pediatric Crohn's disease. *JGH Open.* 2019;4(2):126-131.
16. Chivia J, Costa T, Figueiredo P. Rare Differential Diagnosis for a Common Crohn's Disease Presentation. *GE Port J Gastroenterol.* 2020;27(2):141-143.
17. Reis-Melo A, Espinheira MDC, Pinto-Pais I, Bonito Vitor A, Bustamante J, Trindade E. Perianal Disease and Granulomas: Think Out of the Box. *GE Port J Gastroenterol.* 2020;27(2):119-123.
18. Nørgård BM, Larsen MD, Friedman S, Fedder J. Corticosteroids Prior to Embryo Transfer in Assisted Reproduction in Women with Crohn's Disease and Ulcerative Colitis - A Nationwide Cohort Study. *Clin Epidemiol.* 2020;12:317-326.
19. Canova C, Ludvigsson JF, Di Domenicantonio R, Zanier L, Barbiellini-Amidei C, Zingone F. Perinatal and Antibiotic Exposures and the Risk of Developing Childhood-Onset Inflammatory Bowel Disease: A Nested Case-Control

- Study Based on a Population-Based Birth Cohort. *Int J Environ Res Public Health*. 2020;17(7):2409.
20. Au J, Gibson FT, Aronson IK. Follicular occlusion triad: an isotopic response or adverse effect of rituximab? *Dermatol Online J*. 2020;26(2):13030.
 21. Lu Y, Ding G, Zheng H, et al. Effect of herb-partitioned moxibustion on dopamine levels and dopamine receptor 1 expression in the colon and central nervous system in rats with Crohn's disease. *J Tradit Chin Med*. 2019;39(3):356-336.
 22. Bondarenko KR, Dobrokhotova YE, Rummyantseva TA, Nasyrova NI. Crohn's disease of the vulva: A tough diagnosis (a case report of a 47 y.o. patient). *Clin Case Rep*. 2020;8(3):563-567.
 23. Drucker NA, Wang SK, Puzio T, Kim B, Goze K, Nakeeb A. Emergent Pancreaticoduodenectomy for Duodenum to Superior Mesenteric Vein Fistulation. *Am Surg*. 2020;86(2):e61-e63.
 24. Fukushima G, Ishizaki T, Wada A, Mazaki J, Enomoto M, Nagakawa Y, Katsumata K, Tsuchida A. Colorectal Cancer Associated with Crohn's Disease-A Case Report. *Gan To Kagaku Ryoho*. 2019;46(13):2515-2517.
 25. Moazzami B, Moazzami K, Rezaei N. Early onset inflammatory bowel disease: manifestations, genetics and diagnosis. *Turk J Pediatr*. 2019;61(5):637-647.
 26. Greenstein RJ, Su L, Fam PS, Gurland B, Endres P, Brown ST. Crohn's disease: failure of a proprietary fluorescent in situ hybridization assay to detect *M. avium* subspecies paratuberculosis in archived frozen intestine from patients with Crohn's disease. *BMC Res Notes*. 2020;13(1):96.