Central Asian Journal of Medicine

CURRENT ASPECTS OF SURGICAL TREATMENT OF ULCERATIVE COLITIS

Nazira U. Aripova [1], Doniyor.A. Umarov [2]

1 Doctor of Medical Sciences, Professor EMU University, Tashkent, Uzbekistan
E-mail: aripova-nazira@mail.ru

2 Candidate of Medical Sciences PhD,
Associate Professor EMU University, Tashkent, Uzbekistan
E-mail: doniyorumarov1991@gmail.com

ABSTRACT

Issues concerning the surgical treatment of patients with severe forms of ulcerative colitis (UC) currently attract the attention of surgeons worldwide. This is due not only to the increasing number of cases but also to the lack of a unified opinion on surgical tactics.

The rapid progression of the disease, reevaluation of conservative treatment possibilities, and unclear indications for surgery often lead to delays in surgical intervention. At the same time, extensive resection of the colon in patients at the terminal stage of intoxication and metabolic disturbances is accompanied by a high frequency of postoperative complications (50-80%) and mortality rates (15.5-60%).

Key words: Ulcerative Colitis, Surgical Treatment, Postoperative Complications, Anastomosis, tromboembolia.

INTRODUCTION

The economic aspect of the problem is also significant: the peak incidence of UC occurs between the ages of 20 and 40, encompassing the most active and working segments of society.

The history of surgical treatment for UC spans over 100 years, yet the development of treatment strategies for severe forms remains a current challenge. Different authors have varying opinions on the indications for transitioning from conservative to surgical treatment. Modern UC surgery is moving from emergency to urgent procedures, where surgeries are planned before complications arise, alongside the recognition of the ineffectiveness of conservative therapy.

Delays in transitioning from conservative to surgical treatment, underestimation of the patient's condition severity, and the futility of drug therapy worsen treatment outcomes. This is particularly relevant in cases involving intestinal bleeding, toxic dilatation, and perforation of the colon, which significantly increase the risk of fatal outcomes.

The risk of colon cancer in UC patients is 7-8 times higher than in the general population, and the presence of malignancy is an absolute indication for surgery. The incidence of colorectal cancer with a disease duration of 5 years is 2-3%, after 10 years — 12%, after 20 years — 23%, and over 25 years — 42%.

All these issues highlight the need for a clear treatment strategy for severe UC cases, combining timely use of both conservative and surgical methods, considering the individual characteristics of the patient. The improvement of surgical treatment outcomes is linked to timely determination of surgical indications, refinement of surgical techniques, and adequate therapy in the pre- and postoperative periods.

MATERIALS AND METHODS

The study was conducted using a "case-control" approach among patients with inflammatory bowel diseases who received treatment at the Department of Proctology and Abdominal Surgery of the Multidisciplinary Clinic of the Center for Professional Qualification Development of Medical Workers from 2019 to 2024.

A total of 184 patients participated in the study, including 104 men (56.5%) and 80 women (43.5%).

A severe form of the disease was diagnosed in 61 (33.1%) patients, a moderately severe form in 61 (32.8%), and a mild form in 62 (34.1%).

According to the extent of colonic involvement:

- Total colonic involvement was detected in 60 (32.4%) patients,
- Subtotal involvement in 28 (15.3%),
- Left-sided involvement in 37 (20.1%),
- Inflammatory changes in the distal colon in 59.2 (32.2%) patients.

Extraintestinal manifestations were observed in 104 (56.8%) patients.

Indications for surgical treatment in ulcerative colitis (UC) are classified as absolute and relative. Absolute indications include complications such as perforation, massive intestinal bleeding, and acute toxic colonic dilatation.

Relative indications for surgical intervention, as described in the work of M.P. Zakharash et al. [2,3], include:

- Chronic continuous forms of UC with total colonic involvement (pancolitis) persisting for more than 10 years without regression of morphological changes, as well as the presence of multiple pseudopolyps;

- Frequently recurring forms of UC with total colonic involvement resistant to medical therapy;

- Severe steroid-dependent and steroid-resistant forms of the disease;

- Dysplasia of the colonic mucosa;

- Significant growth retardation and delays in physical and mental development in children;

- Severe extraintestinal manifestations (primary sclerosing cholangitis, liver cirrhosis, gangrenous pyoderma, etc.).

After thorough examination and diagnosis confirmation, surgical treatment was performed on 32 patients (17.2%). Among them, surgeries due to absolute indications (bleeding, peritonitis, toxic dilatation, progression of multiple organ failure syndrome) were required in 17 patients (51.5%), while 15 patients (48.5%) underwent surgery due to relative indications.

Analysis of Specific Complications

Intestinal bleeding was diagnosed in 5 (9.8%) patients, using the following clinical criteria:

- Frequency of defecation of 12 or more times per day with blood in the stool despite comprehensive therapy, including steroid administration for 7 days;

- Blood loss exceeding 1000 ml per day.

Toxic colonic dilatation was detected in 6 (11.9%) patients. The dilation of one or more sections of the colon reached 8 cm or more. Symptoms included severe intoxication, abdominal distension, and tympanitic resonance over the colon.

Radiographic examination in 4 patients revealed maximum dilation in the transverse colon (8–13 cm), while in 2 patients, the dilation was in the sigmoid colon (7–12 cm).

Colonic perforation was diagnosed in 11 (19.1%) patients. In 9 cases, the diagnosis was established within hours of hospital admission, while in 2 patients, the complication developed during conservative treatment.

The clinical picture of acute perforation was absent, but progressive intoxication and abdominal distension were noted in 5 patients, and peritoneal signs in 6 patients. The presence of free gas in the abdominal cavity, confirming the diagnosis, was detected radiographically in 7 patients.

Colorectal cancer development was observed in 3 (6.1%) patients, mainly in those with chronic UC with rare exacerbations. The average disease duration

before tumor detection was 20.5 ± 5.4 years. One patient (2.2%) was diagnosed with multicentric tumor growth with 2–7 adenocarcinoma foci of varying differentiation degrees.

Among relative indications for surgical treatment:

- 11 (24.2%) patients had total colonic involvement with irreversible mucosal changes;

- Steroid-dependent and steroid-resistant forms of the disease were diagnosed in 3 (7.1%) patients;

- In 6 (9.9%) patients, surgery was performed due to chronic recurrent disease resistant to medical therapy.

Types of Surgical Interventions

- Colectomy with anterior rectal resection and ileostomy – 13 (24.5%) patients.

- Colectomy with ileostomy – 6 (11.2%) patients.

- Proctocolectomy with permanent ileostomy – 2 (3.7%) patients.

- Colectomy with low anterior resection and ileoanal pouch anastomosis – 22 (41.2%) patients.

- Colectomy with anterior resection and ileorectal anastomosis – 10 (18.8%) patients.

Among patients operated on for absolute indications, colectomy with anterior rectal resection and ileostomy was performed in 13 (24.5%) cases. In 4 (4.5%) patients, due to the severity of their condition, surgery with ileostomy formation was performed.

In 32.1% of cases, reconstructive procedures were successfully carried out. In two cases (3.7%), due to severe rectal changes, proctocolectomy with permanent ileostomy was performed.

Among patients operated on for relative indications, primary restorative procedures were prioritized:

- Colectomy with low anterior resection and ileoanal pouch anastomosis was performed in 22 (41.2%) patients. In 78.2% of cases, a preventive ileostomy was created due to a high risk of anastomotic failure.

- Colectomy with anterior resection and ileorectal anastomosis was performed in 10 (18.8%) patients.

- In 2 (3.7%) patients, due to severe rectal changes, colectomy with ileostomy was performed, allowing for later reconstructive surgery.

RESULTS AND DISCUSSION

Postoperative complications were more frequently observed among patients who underwent surgery due to absolute indications, accounting for 37.2% (9 patients). The main complications included purulent-septic processes, such as surgical wound infections, pelvic abscesses, and postoperative peritonitis, which were identified in 6 (21.0%) patients. In 2 (5.1%) cases, pulmonary embolism (PE) developed, one of which resulted in a fatal outcome.

Among patients operated on for relative indications, the frequency of postoperative complications was 21.3% (6 cases). In 2 (7.6%) cases, failure of the ileoanal pouch anastomosis was observed, necessitating the creation of a preventive ileostomy, which was successfully closed after two months. Purulent-septic complications (wound infection, pelvic abscesses) were recorded in 3 (9.1%) patients. No thrombotic complications were observed in this group.

The overall mortality rate was 6.2% (3 patients), with fatal outcomes recorded in patients with the most severe course of the disease, reduced immune reactivity, and a high degree of complications.

During surgical interventions for severe forms of ulcerative colitis (UC), the following factors were considered: the development of coagulopathy against the background of hemorrhagic syndrome, reduced elasticity of the intestinal wall and an increased risk of its damage during manipulations, as well as decreased regenerative capacity of tissues. Resuscitation and anesthetic support were tailored to the severity of the patients' condition and the level of surgical risk. In the postoperative period, potential complications were anticipated, and infusion therapy was administered to manage hypovolemia and hypoxia, including protein and glucose-saline solutions.

Key Surgical Principles

The main principles of surgery included:

- Thorough hemostasis at all stages of the procedure;
- Microbiological examination of peritoneal exudate;
- Minimization of contact with the affected colonic wall to prevent additional trauma;
- Ligation of major vessels immediately before resection of the pathological colonic segment;
- Secure fixation of intestinal stomas;
- Prolonged abdominal drainage (for 5–8 days).

Postoperative Period and Recovery

To stabilize patients with severe UC, intensive therapy was required for 10–14 days, followed by specialized outpatient treatment for at least 2–3 months.

In the early postoperative period, a comprehensive approach was applied, including daily monitoring of clinical and laboratory parameters, along with the following therapeutic measures:

- Hormone therapy;
- Infusion therapy;
- Correction of hypoproteinemia and electrolyte imbalances;
- Antibacterial therapy;
- Adequate pain management;
- Stimulation of intestinal motility;
- Early enteral nutrition;
- Ultrasound monitoring of the abdominal cavity.

The application of this regimen, combined with technically accurate surgical execution, reduced the incidence of postoperative complications following emergency surgical interventions in 87.2% of patients.

Functional Outcomes

The assessment of the effectiveness of reconstructive-restorative surgeries was based on the restoration of sphincter function and the quality of life of patients.

- Good outcome: Full restoration of continence for stool and gas, stool frequency of 1–2 times per day, absence of significant complaints within the first 2–3 weeks after surgery, and preservation of work capacity.

- Satisfactory outcome: Stool frequency of 4–6 times per day within 3–6 months after surgery, formed or semi-liquid stool, with some restrictions in professional activities.

An overall positive effect of surgical treatment was observed in 40 (74.6%) patients, who demonstrated good and satisfactory outcomes after reconstructive interventions.

CONCLUSIONS

1. The implementation of the proposed treatment strategy enabled more accurate and timely identification of indications for surgical intervention, which positively impacted the outcomes of surgical treatment.

2. Early diagnosis of surgical indications, rational selection of the scope and technique of surgery, a comprehensive approach to postoperative therapy, and the individualized application of various surgical rehabilitation methods currently

contribute to achieving favorable and satisfactory outcomes in the treatment of ulcerative colitis (UC).

REFERENCES

1. Ahluwalia B., Moraes L., Magnusson M.K., Ohman L. Immunopathogenesis of inflammatory bowel disease and mechanisms of biological therapy // Scandinavian Journal of Gastroenterology. 2018. Vol. 53. P. 379–389.

2. Akinfieva O.V., Bubnova L.N., Bessmeltsev S.S. NKT cells: their characteristics and functional role in immune response regulation // Oncohematology. 2010. Vol. 5. No. 4. P. 39–47.

3. Ananthakrishnan A.N., Bernstein C.N., Iliopoulos D., Macpherson A., Neurath M.F., Ali R.A.R., Vavricka S.R., Fiocchi C. Environmental triggers in inflammatory bowel disease: a review of progress and evidence // Nat. Rev. Gastroenterol. Hepatol. 2018. 15, P. 39–49.

4. Bennett M.S., Round J.L., Leung D.T. Innate-like lymphocytes in intestinal infections // Curr. Opin. Infect. Dis. 2015. Vol. 28, No. 5. P. 457–463.

5. Bikbavova G.R., Livzan M.A., Lozinskaya M.Yu. Pathogenetic factors of ulcerative colitis: current data for 2020 // Bulletin of Siberian Medicine. 2021. 20(2). P. 130–138.

6. Cohen L.J., Cho J.H., Gevers D., Chu H. Genetic factors and the gut microbiome as therapeutic targets for inflammatory bowel diseases // Gastroenterology. 2019. 156(8), P. 2174–2189.

7. Gaffen S.L., Jain R., Garg A.V., Cua D.J. The IL-23–IL-17 immune axis: from mechanisms to therapeutic testing // Nat Rev Immunol. 2014. September;14(9):585–600. doi: 10.1038/nri3707. PMID: 25145755; PMCID: PMC4281037.

8. Glavnov P.V., Lebedev N.N., Kashchenko V.A., Varzin S.A. Ulcerative colitis and Crohn’s disease: current state of etiology, diagnosis, and treatment (review) // Bulletin of St. Petersburg State University. Ser. 11. 2015. Issue 4. P. 48–68.

9. Guan Q.A. A comprehensive review and update on the pathogenesis of inflammatory bowel disease // J. Immunol. Res. 2019. 7247238. doi: 10.1155/2019/7247238. PMID: 3188630.

10. Hegde S., Chen X., Keaton J.M., Reddington F., Besra G.S., Gumperz J.E. NKT cells direct monocytes toward a dendritic cell differentiation pathway // J. Leukoc. Biol. 2007. Vol. 81, No. 5. P. 1224–1235.

11. Ilyashenko M.G., Tarasova G.N., Fedotova E.N., Chumakova E.A. Phagocytic activity of neutrophilic granulocytes in patients with inflammatory

bowel diseases depending on clinical characteristics // Practical Medicine. 2012. Vol. 62. No. 7. P. 170–173.

12. Konovich E.A., Shirokikh K.E., Khalif I.L., Shapina M.V. Colonic cytokines in severe ulcerative colitis // Russian Journal of Gastroenterology, Hepatology, and Coloproctology. 2016. No. 1. P. 93–98.

13. Kostareva O.S., Gabdulkhakov A.G., Kolyadenko I.A., Garber M.B., Tishchenko S.V. Interleukin-17: functional and structural features, use as a therapeutic target // Advances in Biological Chemistry. 2019. Vol. 59. P. 393–418.

14. la Scaleia R., Stoppacciaro A., Oliva S., Morrone S., di Nardo G., Santoni A., Cucchiara S., Palmieri G. Dysregulation of the NKG2D/ligand system and functional changes in innate immunity cell populations in pediatric inflammatory bowel disease // Inflamm. Bowel Dis. 2012. Vol. 18. P. 1910–1922.

15. Lee S.H., Kwon J.E., Cho M.L. Immunological pathogenesis of inflammatory bowel disease // Intest Res. 2018 Jan;16(1):26–42. doi: 10.5217/ir.2018.16.1.26. Epub 2018 Jan 18. PMID: 29422795; PMCID: PMC5797268.

16. Maev I.V., Andreev D.N., Dicheva D.T., Velikanov E.V. Crohn's disease: etiopathogenesis, diagnosis, and conservative treatment. A guide for physicians. – Moscow, 2016. – 67 p.

17. Nigar S., Yamamoto Y., Okajima T., Sato T., Ogita T., Shimosato T. Immune synergistic oligodeoxynucleotide from *Lactobacillus rhamnosus* GG enhances immune responses when co-stimulated with bacterial and fungal cell wall components // Anim. Sci. J. 2018. Vol. 89. P. 1504–1511.

18. Obraztsov I.V., Shirokikh K.E., Shapina M.A., Sukhina M.A., Khalif I.L. Immunophenotyping of T-lymphocytes for differential diagnosis of rectal fistulas in Crohn's disease. Pilot study // Coloproctology. 2016. No. 4 (58). P. 32–41.

19. Pershko A.M., Grinevich V.B., Solovyev I.A., Shotik A.V., Kurilo D.P. Current issues in the pathogenesis of inflammatory bowel diseases // Experimental and Clinical Gastroenterology. 2018. No. 5. P. 140–149.

20. Schönrich G., Raftery M.J. CD1-restricted T cells in chronic viral infections: "Sympathy for the devil"? // Front Immunol. 2018. Vol. 9. P. 1–16. doi: 10.3389/fimmu.2018.00545.

21. Shubich M.G., Mednikova V.G. The significance of the nitroblue tetrazolium reduction test for studying the functional activity of neutrophils // Laboratory Work. 1978. No. 5. P. 195–198.

22. Sizyakina L.P., Tarasova G.N., Dobaeva N.V. Evolution of views on the immunopathogenesis of inflammatory bowel diseases // Experimental and Clinical Gastroenterology, issue 132. 2017. No. 8. P. 57–61.

23. Souza H.S.P. de Immunopathogenesis of inflammatory bowel disease: current state of affairs / H. S. P. de Souza, C. Fiocchi // Nat. Rev. Gastroenterol. Hepatol. 2015. Vol. 13, No. 1. P. 13–27.

24. Tkachev A.V., Mkrtian L.S., Belovolova R.A., Devlikamova T.A. Diagnostic significance of immunological parameters in various forms of ulcerative colitis // Medical Bulletin of the North Caucasus. 2019. No. 14(2). P. 334–338.

25. Valeeva A.R., Skorokhodkina O.V. Influence of Th17 lymphocytes on autoimmune inflammation in ulcerative colitis // Russian Allergology Journal. 2017. No. 1. P. 22–23.

26. van Dieren J.M., van der Woude C.J., et al. The role of CD1d-restricted NKT cells in the intestine // Inflamm. Bowel Dis. 2007. Vol. 13, No. 9. P. 1146–1152.

27. Zafransky A.Yu., Adamovich A.V., Vorobey A.M., Starostin D.B. Phenotypic profile of peripheral blood lymphoid cells in patients with inflammatory bowel diseases // Medical Immunology. 2020. Vol. 22. No. 6. P. 1131–1140.