CAJM

Central Asian Journal of Medicine

100 TMA anniversary

Tashkent State Medical University Press

eISSN: 2181-1326

Scientific Journal

This journal had been publishing since 2018

11

2025

MINISTRY OF HIGHER AND SECONDARY SPECIALIZED EDUCATION OF THE REPUBLIC OF UZBEKISTAN

2030 | UZBEKISTAN RESEARCH ONLINE

OAK.uz Supreme Attestation Commission at the Cabinet Ministers of the Republic of Uzbekistan

Digital Commons Network

Google Scholar

1/343

C A J M

Central Asian Journal of Medicine

Tashkent State Medical
University Press

Scientific Journal
This journal had been publishing since 2018

eISSN: 2181-1326 (online)
ISSN: 2181-7812 (print)

№ 11, 2025. Vol. 1

The Central Asian Journal of Medicine is a peer-reviewed scientific journal that publishes original scientific articles. The journal was founded at the Tashkent Medical Academy in 2011 and, in accordance with the Resolution of the Presidium of the Higher Attestation Commission of the Republic of Uzbekistan dated July 30, 2020, No. 283/7.1, operates as a recognized scientific periodical. The main goal of this journal is to promote the development of education and research activities among faculty members, doctoral candidates, and students in the fields of Medical Sciences, Medical Education, Public Health, Nursing, Rehabilitation, and Therapy.

OAK.uz **Supreme Attestation Commission at the Cabinet Ministers of the Republic of Uzbekistan**

Abdurakhimov Z.A., Nasirova R.R. / Comprehensive assessment of the impact of digitalization on the quality of medical documentation, prescriptions, and diagnostics in the departmental healthcare system 230

Aslonov I.F. / Impact of comorbid conditions on the development of nephrotoxicity in patients receiving anti-tuberculosis therapy 240

Abboskhonov A.A., Azizova R.B. / Comorbid conditions in patients with symptomatic epilepsy 246

Makhmanazarov O.M. / The influence of chronic diffuse liver diseases on the course and outcome of acute intestinal obstruction (literature review) 253

Gazieva Sh.R. / The involvement of epigenetic regulators in brain adaptation to ischemic injury 258

Abdukarimov M.U. / Analysis of symptom spectrum and comorbid pathologies in destructive pulmonary tuberculosis 263

Rakhmatova D.B. / Assessment of the results of 24-hour blood pressure monitoring in women of reproductive age 267

Sadikov A.A., Sagdiev Z.Kh. / Medical and social determinants of health among athletes with disabilities: a global review 275

Abduvalieva I.Kh., Gadaev A.G., Mukhamedova N.Kh., Sabirova M.R. / Assessment of the correlation between troponin levels and NGAL and KIM-1 in patients with acute myocardial infarction 281

Rashidova N.S., Salimjonov J.J. / Comprehensive assessment of neurological complications following COVID-19 vaccination 286

Abdullaeva N.K., Babadjanova Sh.A. / Severe vitamin B12–deficiency anemia: laboratory findings and diagnostic relevance 293

Mekhmanov Sh., Adilbekova D. / Radical surgery in the management of large bowel obstruction of tumor etiology 299

Mirsaidov U.A. / The role of genotype combinations of candidate genes (TNF-A, IL-6, SOD2, and IL-1) in predicting dermatopathies in obese patients 307

Erkinova S.A. / Clinical outcomes of cerebral arteriovenous malformations: analysis of an evaluated patient cohort 314

Mamatkulov I.A., Yusupov A.S., Khakimov A.B., Turayev M.Z., Khudoynazarov R.E. / Anesthesiological protection during cardiosurgical operations in children 319

Sharipov I.L. / Choice of tracheal intubation options in maxillofacial surgery 324

Gulyamov Sh.B., Alimova D.D., Amonov Sh.E., Amonov A.Sh., Ergashev O.A. / Congenital isolated middle ear anomalies: modern aspects of diagnosis and surgical treatment 330

Irnazarova D.Kh., Yuldasheva D.Yu., Irnazarov A.A. / Bioelectrical impedance as a diagnostic and prognostic tool in uterine fibroids 334

RADICAL SURGERY IN THE MANAGEMENT OF LARGE BOWEL OBSTRUCTION OF TUMOR ETIOLOGY

Sh. Mekhmanov – Ph.D., associate professor
D. Adilbekova – D.M.Sc., professor
Tashkent State Medical University (Tashkent, Uzbekistan)
zebooriginal@gmail.com

Abstract: *This article analyzes the immediate results of radical surgical treatment in 193 patients with acute large bowel obstruction of tumor etiology, treated between 2000 and 2022. The study highlights the importance of a differentiated surgical approach based on tumor localization and the patient's condition. For right-sided tumors, right hemicolectomy with ileotransverse anastomosis was performed. For left-sided lesions, options included the Hartmann procedure, left hemicolectomy with primary anastomosis, or subtotal colectomy, depending on the degree of colonic wall changes. Intraoperative antegrade decompression techniques are described, facilitating one-stage resection with primary anastomosis even in left-sided obstructions. Postoperative mortality was 16%, primarily associated with delayed intervention in elderly patients. The findings advocate for primary radical surgery aimed at both relieving obstruction and removing the tumor, accompanied by mandatory nasogastric and transanal decompression.*

Keywords: *radical surgery, hemicolectomy, anastomosis, intraoperative decompression.*

Introduction.

Colorectal cancer (CRC) represents a significant global health challenge, consistently ranking as the third most common malignancy and the second leading cause of cancer-related mortality worldwide (Sung et al., 2021). A particularly severe and life-threatening complication of CRC is acute large bowel obstruction (LBO), which occurs in approximately 15-40% of patients with colorectal tumors and constitutes up to 85% of all emergency surgical admissions related to colon pathology (Gataullin, 2015; Frago et al., 2014). This complication not only signifies an advanced stage of the disease but also presents a complex surgical dilemma, historically associated with high morbidity and mortality rates.

The management of malignant colonic obstruction has evolved considerably, yet remains a subject of intense debate. Traditional approaches often favored staged procedures, such as initial diversion (colostomy) followed by tumor resection in a second operation (the Hartmann procedure or its variants), primarily due to concerns over the viability of the edematous, unprepared proximal colon and the high risk of anastomotic leak (Torralba et al., 2010; Dastur et al., 2008). Studies from the late 20th and early 21st centuries reported postoperative mortality rates ranging from 15% to 55% and complication rates, including surgical site infections and anastomotic failure, as high as 40-80% (Tekkis et al., 2004; Costi et al., 2014).

The paradigm has progressively shifted towards a more aggressive, single-stage approach whenever feasible. Researchers and surgeons have advocated for primary resection and anastomosis, supported by advancements in perioperative care, intensive care unit (ICU) management, and refined surgical techniques. Key among these techniques is intraoperative colonic irrigation or antegrade decompression, pioneered and advocated by surgeons like Dudley, Radcliffe, and Koruth, which allows for safe primary anastomosis even in left-sided obstructions by reducing intraluminal pressure and fecal load (Dudley et al., 1980; Koruth et al., 1985). The choice between primary anastomosis and staged resection is influenced by multiple factors, including tumor localization, the patient's physiological status, the degree of colonic

dilation and ischemia, and the presence of peritonitis or perforation (Jiménez-Pérez et al., 2021; Kim et al., 2017).

For right-sided obstructions, consensus largely supports primary right hemicolectomy with ileocolic or ileotransverse anastomosis as the standard of care, given the more liquid nature of the ileal contents and superior blood supply (Lee et al., 2018). The controversy is more pronounced for left-sided obstructions. While subtotal colectomy with ileorectal anastomosis offers definitive treatment and eliminates synchronous lesions, it carries the risk of increased bowel frequency (Biondo et al., 2004). Segmentary resection with on-table lavage or decompression presents an alternative to preserve colon length. Furthermore, the advent of self-expanding metal stents (SEMS) as a bridge to elective surgery has added another dimension to the therapeutic arsenal, potentially allowing for bowel preparation and stabilization, though concerns about long-term oncological outcomes and perforation risks persist (van Hooft et al., 2020; Arezzo et al., 2017).

At the Tashkent State Medical University Surgical Clinic, managing patients with obstructive CRC is a frequent and demanding task. The epidemiological profile, often characterized by late presentation and advanced disease stages, necessitates a tailored and decisive surgical strategy. This study aims to contribute to the existing body of knowledge by reviewing our extensive, 22-year experience with radical surgical interventions for tumor-induced LBO, analyzing outcomes, and refining our institutional approach based on tumor localization, intraoperative findings, and the application of decompression techniques.

Purpose of the Research.

The purpose of this research was to conduct a comprehensive review and analysis of the surgical tactics employed and to evaluate the immediate postoperative results of applying radical surgical treatment in patients presenting with acute large bowel obstruction caused by colorectal tumors. The study sought to assess the efficacy and safety of differentiated approaches based on tumor laterality, to analyze the role and outcomes of intraoperative antegrade decompression in facilitating single-stage procedures, and to identify factors contributing to postoperative mortality and morbidity in this high-risk patient cohort.

Materials and Methods.

This retrospective observational study was conducted at the Surgical Department of the Tashkent State Medical University Clinic. The study cohort comprised 193 consecutive patients who underwent emergency or urgent surgical intervention for acute large bowel obstruction between January 2000 and December 2022. The inclusion criterion was surgically confirmed acute LBO requiring operative management. Exclusion criteria included non-tumor etiologies of obstruction where the primary pathology was not a colorectal neoplasm (e.g., benign strictures, foreign bodies), as well as patients with obstruction due to peritoneal carcinomatosis where palliative procedures only were performed.

The patient group consisted of 117 men (60.7%) and 76 women (39.3%), with a mean age of 67.1 ± 1.6 years (range: 19 to 88 years). Preoperative diagnosis was established through a combination of clinical assessment, laboratory tests (complete blood count, biochemistry, coagulation profile), plain abdominal radiography in supine and upright positions, and advanced imaging. Multislice computed tomography (MSCT) of the abdomen and pelvis became the cornerstone of radiological diagnosis in later years of the study, providing detailed information on the level and cause of obstruction, the presence of tumor invasion, distant metastases (particularly hepatic), and signs of bowel ischemia or perforation. Additional diagnostic tools included irrigoscopy and colonoscopy (when feasible without causing perforation) to visualize the obstructing lesion, and abdominal ultrasound to assess for metastatic disease and free fluid.

All patients received short-term intensive preoperative preparation aimed at correcting fluid-electrolyte imbalances and metabolic acidosis, initiating broad-spectrum antibiotic therapy (typically a combination of a third-generation cephalosporin and metronidazole), and nasogastric decompression. The timing of surgery was individualized: patients in stable condition without signs of peritonitis or severe sepsis underwent a period of resuscitation (4-8 hours), while those with signs of diffuse peritonitis or clinical deterioration were taken for immediate laparotomy.

Surgical procedures were performed under general anesthesia via a midline laparotomy. The definitive surgical strategy was determined intraoperatively based on: 1) Tumor localization (right vs. left colon); 2) The degree of dilation and viability of the proximal colon; 3) The presence of serosal tears or impending perforation; 4) The extent of local tumor invasion; and 5) The patient's overall hemodynamic stability.

For right-sided tumors (cecum, ascending colon, hepatic flexure): The standard procedure was an extended right hemicolectomy with ileotransverse anastomosis. In cases of tumor perforation with fecal peritonitis, after thorough peritoneal lavage with saline and antiseptic solutions, the resection was concluded with a Brooke's ileostomy. If there was extensive retroperitoneal invasion, a concomitant retroperitoneal lymphadenectomy was performed.

For left-sided tumors (splenic flexure, descending colon, sigmoid colon, rectosigmoid junction): The approach was more varied. In cases with severe colonic wall edema, ischemia, or serosal tears, a Hartmann's procedure (resection of the tumor-bearing segment with end colostomy and closure of the rectal stump) was performed. When the proximal colon appeared viable and the patient was stable, left hemicolectomy or sigmoid resection with primary colorectal anastomosis was attempted. To enable this, an intraoperative antegrade decompression and lavage technique was utilized in selected cases (described in detail in Results). In scenarios with massive dilation of the entire colon proximal to the obstruction, subtotal colectomy with ileosigmoid or ileorectal anastomosis was chosen.

A critical adjunct to all procedures was decompressive intubation. This included mandatory perioperative nasogastric or nasoenteral tube placement and, following anastomosis, transanal insertion of a soft rectal tube (10-15 cm above the anastomotic line) for continued decompression.

Postoperative management was standardized in the surgical ICU and included continued fluid and electrolyte replacement, parenteral nutrition until return of bowel function, antibiotic therapy, thromboembolism prophylaxis with low-molecular-weight heparin, and careful monitoring for complications.

Data collection included patient demographics, clinical presentation, diagnostic findings, operative details, postoperative course, complications (classified according to the Clavien-Dindo system), and 30-day mortality. Statistical analysis was performed using SPSS software (version 26.0). Descriptive statistics were presented as mean ± standard deviation for continuous variables and as frequencies and percentages for categorical variables. Comparative analysis between groups (e.g., right vs. left side, survivors vs. non-survivors) was performed using Chi-square test or Fisher's exact test for categorical variables and Student's t-test or Mann-Whitney U test for continuous variables, as appropriate. A p-value of <0.05 was considered statistically significant.

Results.

Of the 193 patients with acute LBO, the underlying etiology was a primary colorectal tumor in 162 patients (83.9%). Other causes included sigmoid volvulus (18 patients, 9.3%), adhesive obstruction (9 patients, 4.7%), and Crohn's disease (4 patients, 2.1%). The subsequent analysis focuses exclusively on the 162 patients with tumor-induced obstruction.

Table 1.

Demographic and Clinical Characteristics of Patients with Tumor-Induced Obstruction (n=162)

Characteristic	Value
Mean Age (years)	68.4 ± 10.2
Gender (Male/Female)	98 / 64 (60.5% / 39.5%)
ASA Physical Status (III/IV)	121 / 41 (74.7% / 25.3%)
Presence of Comorbidities	103 (63.6%)
- Cardiovascular	71 (43.8%)
- Diabetes Mellitus	29 (17.9%)
- Chronic Kidney Disease	11 (6.8%)
- COPD	17 (10.5%)
Time from Symptom Onset to Surgery (hours)	46.3 ± 18.7
Clinical Presentation	
- Abdominal Pain	162 (100%)
- Distention	158 (97.5%)
- Absolute Constipation	152 (93.8%)
- Nausea/Vomiting	121 (74.7%)
- Signs of Peritonitis	37 (22.8%)

Tumor localization was as follows: Right colon (cecum/ascending colon/hepatic flexure) – 31 patients (19.1%); Left colon (splenic flexure/descending/sigmoid/rectosigmoid) – 131 patients (80.9%). The detailed distribution is shown in Figure 1.

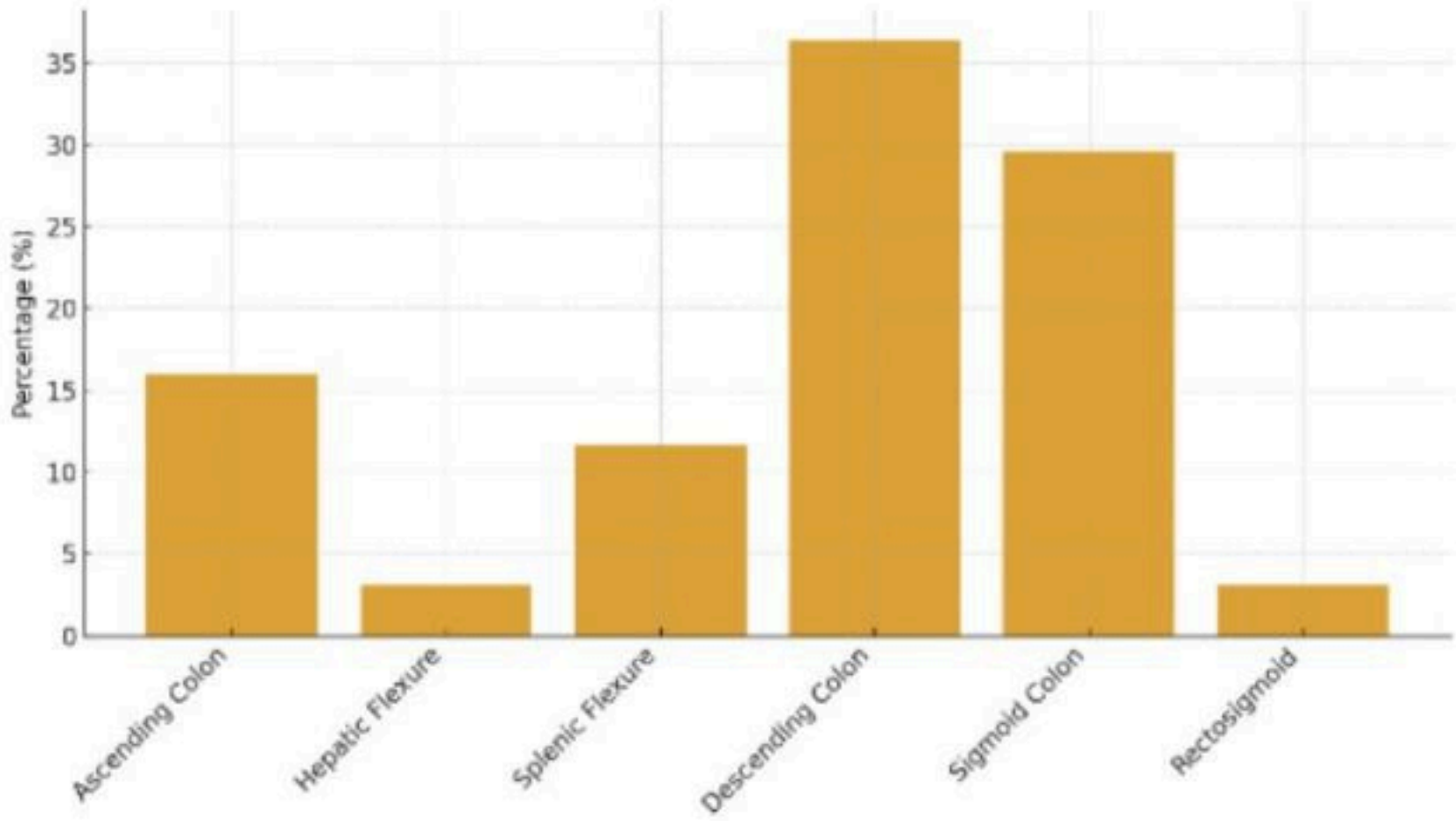

Fig. 1. **Distribution of Tumor Localization in 162 Patients with Obstructive Colorectal Cancer**

The surgical procedures performed were strictly guided by tumor laterality and intraoperative findings.

Table 2.

Surgical Procedures Performed Based on Tumor Localization

Tumor Localization	Surgical Procedure	Number of Patients (n)	Percentage (%)
Right Colon (n=31)	Right Hemicolectomy + Ileotransverse Anastomosis	26	83.9%
	Right Hemicolectomy + Terminal Ileostomy (Brooke)	5	16.1%
Left Colon (n=131)	Hartmann's Procedure	56	42.7%
	Left Hemicolectomy/Sigmoid Resection + Primary Anastomosis	50	38.2%
	Subtotal Colectomy + Ileorectal/Ileosigmoid Anastomosis	10	7.6%
	Other (Palliative colostomy only)	15	11.5%

**Note: The "Left Hemicolectomy/Sigmoid Resection + Primary Anastomosis" group (n=50) includes 39 patients who underwent standard resection and 11 who had sigmoid resection. Of these 50, 10 patients (20%) required intraoperative antegrade decompression to facilitate a safe primary anastomosis. **

The maneuver was employed in 10 patients with left-sided tumors where the proximal colon was severely dilated but the wall appeared viable without transmural necrosis. The technique involved:

- ✓ Delivery of the cecum and appendix into the operative field.
- ✓ Placement of a purse-string suture at the base of the appendix on the cecal wall.

Insertion of a Foley catheter (Ch 18-22) through the appendiceal stump into the cecal lumen. Initial aspiration of gas and liquid content was performed.

Sequential instillation and aspiration of warm physiological saline (500 ml, 700 ml, 1000 ml) to liquefy and remove solid fecal matter, significantly reducing colonic diameter.

For thorough cleansing, the final lavage included 1000 ml of saline with added metronidazole (100 ml) and kanamycin (2.0 g).

Following mobilization of the left colon and application of clamps, a large-bore (3.5 cm) corrugated plastic tube was inserted proximally through a colotomy above the tumor to allow passive drainage of contents.

After satisfactory decompression and lavage, the cecostomy site was closed, and a standard resection with primary end-to-end anastomosis was performed. No anastomotic leaks were observed in this subgroup.

The overall 30-day postoperative mortality rate was 16.0% (26/162 patients). Major postoperative complications (Clavien-Dindo Grade III-V) occurred in 48 patients (29.6%). The distribution of complications and causes of mortality are detailed in Tables 3 and 4.

Table 3.

Postoperative Complications (Clavien-Dindo Grade ≥ II)

Complication	Number of Patients (n)	Percentage (%)
Surgical Site Infection	35	21.6%
Paralytic Ileus (prolonged >5 days)	28	17.3%

Pneumonia	19	11.7%
Anastomotic Leak	4	2.5%
Stoma-related complications (prolapse, necrosis)	5	3.1%
Intra-abdominal Abscess	6	3.7%
Cardiorespiratory Failure	12	7.4%
Acute Renal Failure	8	4.9%
Deep Vein Thrombosis / Pulmonary Embolism	7	4.3%

Table 4.

Causes of Postoperative Mortality (n=26)

Cause of Death	Number of Patients (n)	Percentage of Deaths (%)
Ongoing Sepsis / Multiorgan Failure	14	53.8%
Thromboembolic Events (Mesenteric, Pulmonary)	7	26.9%
Major Cardiac Events (MI, Arrest)	7	26.9%
Anastomotic Leak with Peritonitis	2	7.7%
Stoma Prolapse with Strangulation	3	11.5%

Note: Some patients had multiple contributing factors.

A comparative analysis between survivors (n=136) and non-survivors (n=26) revealed significant differences ($p<0.05$) in key parameters, as summarized in Table 5.

Table 5.

Comparative Analysis of Survivors vs. Non-Survivors

Parameter	Survivors (n=136)	Non-Survivors (n=26)	p-value
Mean Age (years)	66.1 ± 9.8	78.5 ± 7.2	<0.001
ASA Status IV	28 (20.6%)	13 (50.0%)	0.002
Time to Surgery (hours)	42.1 ± 15.3	68.4 ± 20.1	<0.001
Presence of Peritonitis	24 (17.6%)	13 (50.0%)	0.001
Serum Lactate on admission (mmol/L)	2.8 ± 1.1	5.6 ± 2.3	<0.001

Discussion.

Our study, encompassing over two decades of experience, reaffirms that acute malignant large bowel obstruction remains a formidable condition with substantial mortality (16% in our series), consistent with the lower spectrum of rates reported in modern literature (10-25%) (Jiménez-Pérez et al., 2021; Frago et al., 2014). This improvement over historical figures of 40-55% can be attributed to advances in perioperative care, imaging, surgical technique, and ICU support. The predominance of left-sided colon cancers (80.9%) causing obstruction aligns with global epidemiological data and the anatomical predisposition of narrower lumen and solid feces in this region.

The cornerstone of our surgical philosophy is the pursuit of primary radical resection whenever oncologically and technically feasible. This approach is supported by substantial evidence suggesting that staged procedures (e.g., diverting stoma first, resection later) do not

confer a survival benefit and may be associated with higher overall complication rates and a significant proportion of patients never undergoing the definitive resection (Alves et al., 2005). Our data demonstrate that for right-sided obstructions, right hemicolectomy with primary anastomosis is a safe and effective standard, associated with low anastomotic leak rates (none in our right-sided anastomosis group), corroborating the findings of Lee et al. (2018).

The management of left-sided obstructions is more nuanced. Our strategy involved a careful intraoperative assessment. The Hartmann procedure (42.7%) was reserved for patients with unfavorable conditions: severe proximal bowel ischemia, purulent or fecal peritonitis, or critical hemodynamic instability. While it is a life-saving operation, it carries the burden of a permanent stoma in a significant number of elderly patients. The ability to perform primary anastomosis in 38.2% of left-sided cases, including 10 patients who required intraoperative antegrade decompression, represents a significant achievement. Our decompression technique, a modification of established on-table lavage methods, proved effective in creating conditions for safe anastomosis without increasing septic complications. The absence of leaks in this subgroup is encouraging, though the numbers are small. This technique adds operative time but can avert a stoma, improving quality of life. Subtotal colectomy (7.6%) was a valuable option for cases with massive dilation extending to the cecum, preventing the risk of leaving behind a compromised colon segment. However, its functional consequences (increased stool frequency) must be considered.

The analysis of mortality revealed critical risk factors. Advanced age (mean 78.5 years in non-survivors), high ASA score (IV), delayed surgical intervention (mean 68.4 hours), and the presence of peritonitis or systemic acidosis (elevated lactate) were strongly predictive of a fatal outcome. This underscores that the "time factor" is not just about the obstruction but about the systemic inflammatory response and end-organ damage that ensue. Mortality was rarely due to a single technical failure; rather, it was the culmination of physiological exhaustion in elderly patients with limited reserves, culminating in multiorgan failure, thromboembolism, or cardiac events. This highlights the paramount importance of early diagnosis, rapid resuscitation, and expeditious surgery.

Our complication profile is typical for major emergency colorectal surgery. The relatively high rate of surgical site infections (21.6%) reflects the contaminated nature of these operations. The low anastomotic leak rate (2.5% overall) is a positive finding and can be attributed to careful patient selection for anastomosis, the use of decompressive techniques, and routine transanal drainage.

This is a single-center, retrospective study subject to selection and information biases inherent to such designs. The evolution of practices over 22 years (e.g., introduction of CT, changes in antibiotic protocols) may have influenced outcomes. The sample size for some subgroups (e.g., decompression group) is limited, warranting cautious interpretation.

Conclusion.

Primary radical surgery, aiming simultaneously to relieve obstruction and remove the tumor, should be the goal in the management of malignant large bowel obstruction, as it addresses the source of both the acute complication and the underlying oncological disease.

For tumors of the right colon, right hemicolectomy with ileotransverse anastomosis is the procedure of choice and is associated with favorable outcomes.

For left-sided tumors, a differentiated approach is mandatory. In selected patients with viable bowel and controlled sepsis, primary resection and anastomosis is achievable and safe, potentially aided by intraoperative antegrade colonic decompression and lavage. The Hartmann procedure remains a crucial life-saving operation for unstable patients or those with perforated viscera. Subtotal colectomy is an effective option for pancolonic dilation.

Advanced age, delayed presentation, and systemic signs of severe sepsis/peritonitis are the primary drivers of mortality, emphasizing the need for community education for early symptom recognition and streamlined hospital pathways for rapid diagnosis and intervention.

Comprehensive decompression, including nasogastric, intraoperative colonic (when indicated), and postoperative transanal components, is an indispensable adjunct to successful surgical management.

Conflicts of Interest

The author declares no conflicts of interest related to this study, its authorship, or publication.

Acknowledgements

The author wishes to express sincere gratitude to the surgical and nursing staff of the Tashkent State Medical University Clinic for their dedicated care of the patients included in this study. Special thanks are extended to the Department of Scientific Research for their administrative support.

REFERENCES

1. Alves A, Panis Y, Mathieu P, Mantion G, Kwiatkowski F, Slim K; Association Française de Chirurgie. Postoperative mortality and morbidity in French patients undergoing colorectal surgery: results of a prospective multicenter study. Arch Surg. 2005;140(3):278-83.

2. Arezzo A, Balagué C, Targarona E, et al. Colonic stenting as a bridge to surgery versus emergency surgery for malignant colonic obstruction: results of a multicentre randomised controlled trial (ESCO trial). Surg Endosc. 2017;31(8):3297-3305.

3. Biondo S, Parés D, Frago R, et al. large bowel obstruction: predictive factors for postoperative mortality. Dis Colon Rectum. 2004;47(11):1889-97.

4. Costi R, Leonardi F, Zanoni D, Violi V, Roncoroni L. Palliative care and end-stage colorectal cancer management: The surgeon meets the oncologist. World J Gastroenterol. 2014;20(24):7602-7621.

5. Dastur JK, Patel AA, Ganesh R, Mizia H. Operative strategy for obstructing carcinoma of the left colon and rectum. Surgeon. 2008;6(2):80-4.

6. Dudley HA, Radcliffe AG, McGeehan D. Intraoperative irrigation of the colon to permit primary anastomosis. Br J Surg. 1980;67(2):80-1.

7. Frago R, Biondo S, Millan M, et al. Differences between proximal and distal obstructing colonic cancer after curative surgery. Colorectal Dis. 2014;16(9):O323-9.

8. Gataullin I.G. Tactics of surgical treatment of patients with colorectal cancer complicated by obstructive intestinal obstruction. Khirurgiia (Surgery). 2015;5(20). (In Russ.)

9. Jiménez-Pérez J, García-Marín JA, Pérez-Flores D, et al. Management of malignant colorectal obstruction: a systematic review and network meta-analysis of randomized controlled trials. Eur J Surg Oncol. 2021;47(11):2754-2764.

10. Kim HJ, Choi GS, Park JS, Park SY, Lee HJ. Higher rate of perineural invasion in stent-laparoscopic approach in comparison to emergent open resection for obstructing left-sided colon cancer. Int J Colorectal Dis. 2017;32(8):1165-1173.

11. Koruth NM, Hunter DC, Krukowski ZH, Matheson NA. Immediate resection in emergency large bowel surgery: a 7 year audit. Br J Surg. 1985;72(9):703-7.

12. Lee JM, Bai PY, Chang YJ. Comparison of long-term outcomes of emergency surgery for obstructive right- and left-sided colon cancer. World J Surg Oncol. 2018;16(1):210.

13. Setti Carraro PG, Segala M, Cesana B, Tiberio G. Obstructing colonic cancer: failure and survival patterns over a ten-year follow-up after one-stage curative surgery. Dis Colon Rectum. 2001; 44:243-50.

14. Sung H, Ferlay J, Siegel RL, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin. 2021;71(3):209-249.

15. Tekkis PP, Kinsman R, Thompson MR, Stamatakis JD. The Association of Coloproctology of Great Britain and Ireland study of large bowel obstruction caused by colorectal cancer. Ann Surg. 2004;204:76-81.

16. Torralba JA, Robles R, Parrilla P, et al. Subtotal colectomy vs. intraoperative colonic irrigation in the management of obstructed left colon carcinoma. Dis Colon Rectum. 2010;53(9):1281-6.

17. van Hooft JE, Veld JV, Arnold D, et al. Self-expandable metal stents for obstructing colonic and extracolonic cancer: European Society of Gastrointestinal Endoscopy (ESGE) Guideline - Update 2020. Endoscopy. 2020;52(5):389-407.