



History of Issue, Epidemiological and Surgical Aspects of Acute Large Bowel Obstruction of Tumoral Genesis

Mamadiev A.M.¹, Khodjimatomov G.M.², Turgunov A.A.³

¹ Researcher, Andijan branch of the Republican Research Center of Emergency Medicine

² DSc, Professor, Andijan State Medical Institute

³ Researcher, Andijan State Medical Institute

ABSTRACT: The authors in this literature review consider and reveal the history of the issue, epidemiological and surgical aspects of acute obstruction of the colon of tumor genesis. It is noted that patients with colostomy are permanently disabled in acute large bowel obstruction of tumor origin. The presence of a colostomy in these patients often exacerbates the course of comorbidities, thereby making it difficult or excluding the possibility of performing the recovery phase of the operation.

They conclude that today there is still a need for further research and a comprehensive in-depth study of the issues of surgical tactics. The solution of these issues will reduce the frequency of postoperative complications, mortality, improve the performance of labor and social rehabilitation of this contingent of seriously ill patients.

KEYWORDS: Bowel obstruction, Cancer, Intestinal obstruction, Review, Sigmoid colon.

The history of the development of colon surgery dates back more than 200 years ago, when surgical treatment was first performed for colonic obstruction due to its tumor process [17]. In world practice, the first surgical intervention dates back to 1776, when a cecostomy [Shoge R.] was applied for cancer of the transverse colon, and in 1833, Keybard performed a resection of the caecum for a tumor process [37]. With colonic obstruction, Maissonniue in 1854, performed the imposition of a bypass anastomosis, leaving the affected area if it was impossible to remove it. In Russia, in 1886, Pavlov E.V. the first report on resection of the caecum with the formation of an ileotransversoanastomosis according to the "side-to-side" principle between the ileum and ascending colon over a tumor of the caecum complicated by the colon is given [15]. Gussenbauer and Martini, in 1879, performed a resection of the affected area in cancer of the sigmoid colon with the removal of the adductor and efferent loops of the intestine with a favorable outcome. In turn, in 1886, Heinecke with colonic obstruction, as the first stage of the operation, performed the formation of an unloading fistula, and a few weeks later resected the area of the intestine affected by the tumor [19].

In 1898, Zeidler proposed multi-stage operations for tumor lesions of the large intestine with the development of its obstruction [24]. The author recommended the formation of an unloading fistula on the caecum as the first stage, the second stage, after improving the general condition of the patient, is the resection of the intestine affected by the cancerous process, and the third stage is the restoration of the integrity of the intestinal tube. In turn, Schloffer in 1903 developed a method of surgical treatment for a tumor of the left half of the colon, complicated by intestinal obstruction [40]. Subsequently, B.L. Bronstein proposed to call this method the Zeidler-Schloffer operation [17].

In 1902, Mikulicz developed a multi-stage method of resection of the large intestine, which consists in a two-stage resection of the intestine with external removal of intestinal contents. The initially mobilized segment of the intestine with the tumor is brought to the abdominal wall and the adductor and efferent knees of the intestine are sutured. After 2-3 days, the withdrawn intestinal loop is resected together with the tumor, then after two weeks a spur crush is formed to create an anastomosis between the intestinal loops. After 1.5-2 months, it closes the intestinal fistula [36].

Subsequently, the operation of Mikulich was modified by Grekov I.I. in 1928 [5]. The essence of Grekov's operation is reduced to external and internal removal of intestinal contents. A distinctive feature of Grekov's operation is the formation of a lateral anastomosis in the abdominal cavity between the adductor and efferent segments of the intestine.

However, these methods of operations are accompanied by a number of disadvantages. When they are performed, it is not possible to radically remove the mesentery together with the lymph nodes at the base of the mesenteric vessels, the removal of swollen loops of the colon with a tumor through a small incision in the abdominal wall can lead to a further deterioration in the



blood supply to the removed loop with the development of peritonitis, and leaving a large hole in the abdominal wall threatens gut eventration.

Removal of a segment of the colon with a cancerous lesion without restoring intestinal continuity was first proposed in 1908 by Lockhart–Mummery. H. Hartmann in 1921 at the XXX Congress of French surgeons for the first time presented this operation to a wide range of specialists, calling it “a new way to remove the final part of the pelvic colon”. The author performed a resection of the rectosigmoid section, brought the proximal segment of the intestine to the abdominal wall in the form of a single–barreled artificial anus, and sutured the distal end tightly and peritonized [34].

With the accumulation of experience and the improvement of the implementation of this method, today most surgeons use the name “Hartmann–type operation” to refer to a whole group of surgical interventions on the left half of the colon, in which, after removal of the pathological focus, the discharge end of the intestine is sutured tightly, and the adductor is brought into the form of an unnatural anus on the anterior abdominal wall.

The first report in Russia belongs to N.N. Petrov, who called this intervention the Coffey–Hartmann operation, or one–stage transperitoneal operation according to Hartmann [19]. For many decades, the term “obstructive resection of the colon” has been widely used in foreign and domestic literature. A two–stage operation under this name was developed and put into practice by the American surgeon F.W. Rankin in 1928 [38]. At the same time, obstructive resection of the colon according to Rankin can be performed only in a planned manner, in contrast to the Hartmann operation, which is performed, among other things, in acute obstructive colonic obstruction.

To date, the following names using the name of Hartmann are correct: “resection of the sigmoid colon according to Hartmann” (with the formation of a flat sigmoidostoma and suturing of the stump of the sigmoid colon); “Resection of the sigmoid and rectum according to Hartmann” (with the formation of the supraampullary or ampullar parts of the rectum); left–sided hemicolostomy according to the type of the Hartmann operation” (with the formation of a flat transversostomy and suturing of the stump of the transverse colon) [9].

Correa Marinez A. et. al. [32] studied the relationship between the technique of forming intestinal stoma and the incidence of complications. The demographics of patients in all three groups are the same. A total of 127 patients (63%) developed some type of complication. However, the impact of the surgical technique of stoma formation or risk factors for stoma–related complications could not be identified.

Over the past decades, the indications for the Hartmann operation have not changed significantly. The indications for this surgical intervention are a stenosing tumor of the sigmoid and rectum, complicated by tumor perforation or peritonitis, a serious condition of the patient due to concomitant diseases or senile age [41].

Researchers note a widespread increase in the number of patients with tumor lesions of the colon (3–4 times) and ranks first in the structure of all tumors of the digestive canal [1, 3, 33]. According to Martynyuk V.V. [11] the incidence rate of the Russian population was 16.2 per 100,000 population. About 600,000 new cases are registered annually in the world, of which at least 130,000 occur in the United States, where in 2000 130,200 cases of tumors of the rectum and colon were registered, while the mortality rate was 56,300 patients, 93% are in persons of older age groups – 50 years and older [19].

According to WHO, more than 500 thousand cases of colorectal cancer are registered annually in the world. The highest incidence occurs in Western countries, Western Europe and Russia. In Asia and Africa, the increase in incidence is less pronounced. The most frequent and dangerous complication of cancerous lesions of the colon is its obstructive obstruction (COO), which is diagnosed in 75% of cases [10, 22, 35]. At the same time, obstructive obstruction in cancer of the left half of the colon occurs 4–5 times more often than in the right half (cancer of the sigmoid colon is detected in 40–41% of patients, rectosigmoid rectum – in 33–34%).

According to Zaporozhchenko B.S. et al. [6], as a rule, patients with COO are hospitalized in general surgical hospitals, and treatment tactics depend on the qualifications of the team on duty. At the same time, most surgeons note the best results with two–stage operations. The first stage is an obstructive resection of the colon with the removal of a single–barrel colostomy, the distal end is sutured tightly (Hartmann–type operation). Of the staged operations, this is the only one that allows you to simultaneously solve two problems: eliminate intestinal obstruction and radically remove the tumor. The second stage restores the continuity of the colon.



At the same time, radical surgical treatment is possible only in 30–40% of patients [21, 26]. Acute colonic obstruction (ACO) is the most common complication of colon cancer, diagnosed in 15–49% of patients [10, 23]. Up to 65% of emergency operations on the colon end with the formation of a colostomy [7, 27].

Literature data on COO shows that to this day a number of issues in the surgical treatment of this problem remain controversial and not fully understood. A number of contradictions remain in the definition of surgical tactics, the definition of which is influenced by the general condition of the patient, the presence of peritonitis, the level of intoxication, metabolic disorders, and the duration of the disease [28, 30, 31].

When the tumor is localized in the left half of the colon, resection of the intestine with the formation of a primary colonic anastomosis during a planned operation is currently considered the generally accepted method. However, in the conditions of COO, such an operation is associated with a greater degree of risk, primarily due to the likelihood of developing an incompetence of the colonic anastomosis and the dire consequences ensuing from this [8, 20].

According to the literature, the failure of the primary formed anastomosis of the large intestine in conditions of obstruction ranges from 25.1–69.2% [25, 27]. Based on this, in more than 50% of patients, surgical interventions end with the formation of a colostomy, more often according to Hartmann. Some authors are supporters of the three-stage Zeidler–Schloffer operation [19, 24, 39].

The problem of treating patients with COO has a dual focus: saving the lives of patients in an emergency situation and the need to address the issue of the possibility of radical treatment of a malignant neoplasm [12].

There are separate reports on performing simultaneous operations on the left half of the colon for cancer with the formation of a primary colonic anastomosis at the height of the obstruction [14]. Other surgeons consider it expedient to perform minimal interventions at the first stage in the form of formation of unloading colostomes, offering multi-stage operations [18, 19]. According to the majority of authors, the best type of surgical intervention for complicated forms of cancer of the left half of the colon is a Hartmann-type operation. However, the formation of a colostomy significantly reduces the possibility of social and labor rehabilitation of patients [2, 13].

In recent years, the diagnosis and treatment of OOC has improved. Great progress has been noted in anesthesia care and postoperative treatment, but despite these achievements, postoperative mortality remains quite high even in specialized hospitals for emergency surgical care and ranges from 16.0 to 52% [4, 16]. The frequency of postoperative purulent-septic complications, according to the same authors, reaches 38.6 – 80% 5-year life expectancy remains within 43.3 – 55% [3, 7].

It is important to note that to this day, the problem of surgical rehabilitation of colostomy patients is still not fully resolved and relevant, due to the fact that these surgical interventions are no less complicated than primary operations. According to Yargunin S.A. et al. [29], restoration of intestinal continuity becomes impossible in 40–72% of cases. The performance of the recovery phase of the operation is often marred by a high rate of postoperative complications and mortality – up to 19.4% [3, 39].

In turn, according to Khanevich M.D. [21], the formation of primary anastomoses against the background of colonic obstruction is accompanied by a high incidence of anastomotic suture failure, which ranges from 25.1–69.2%. In this regard, in more than 50% of patients, surgeons complete surgical interventions with the formation of a colostomy, more often according to Hartmann.

Under the conditions of elective surgery for tumors of the left half of the colon, there is a method of resection of the affected part of the colon with the primary restoration of intestinal continuity using a T-shaped terminal anastomosis [18, 19].

CONCLUSION

Thus, acute large bowel obstruction of tumor origin remains extremely relevant due to a number of unresolved issues in determining surgical tactics and surgical rehabilitation of colostomy patients. In particular, there is a high incidence of postoperative complications and mortality, as well as persistent disability in patients with colostomy. The presence of a colostomy in these patients often exacerbates the course of comorbidities, thereby making it difficult or excluding the possibility of performing the recovery phase of the operation. In this regard, today there is a need for further research and a comprehensive in-depth study of the issues of surgical tactics and surgical rehabilitation of this group of patients. The solution of these issues will reduce the frequency of postoperative complications, mortality, improve the performance of labor and social rehabilitation in patients with acute large bowel obstruction of tumor genesis.



REFERENCES

1. Artyukhov S.V. Modern methods of treatment of cancer of the left colon with acute intestinal obstruction // Health. Medical encyclopedia. The science. 2 (66), 2017. – p. 8–11.
2. Akhrameev V.B., Grintsov A.G., Antonyuk S.M. and other features of reconstructive and restorative operations in patients after obstructive resection of the colon // Bulletin of emergency and reconstructive surgery. Volume 6, No. 3. 2021. – p. 13–16.
3. Achkasov S.I., Sushkov O.I., Lukashevich I.V., Surovegin E.S. Application of the program of accelerated recovery of coloproctological patients in the daily work of a surgical hospital. Results of a survey of surgeons in Russia // Coloproctology. No. 2 (64), 2018. – p. 59.
4. Vorobyov G.I. Obstructive obstruction of the colon // Doctor. No. 10, 1997. – p. 9–12.
5. Grekov I.I. To the question of the surgical treatment of colon cancers, in particular, according to the second method of Grekov // Bulletin of Surgery and Border Regions. 1928. – p. 245–253.
6. Zaporozhchenko B.S., Shishlov V.I., Gorbunov A.A. Reconstructive and restorative operations in patients after obstructive resection of the colon // Clinical surgery. No. 7, 2011. – p. 19–21.
7. Clinical guidelines “Acute non-tumor intestinal obstruction” (Approved by the Ministry of Health of Russia). 2021.
8. Korolev P.A. Multivisceral resections in the treatment of colon cancer // Oncology. Journal them. P.A. Herzen. No. 4, 2018, – p. 46–51.
9. Kurygin A.A., Semenov V.V., Tarbaev I.S. Operation Hartmann: 100 years in surgery // Bulletin of Surgery. I.I. Grekov. 179 (2), 2020. – p. 85–87.
10. Lantsov I.S. Elimination of double-barrel ileostomy (literature review) / Lantsov I.S., Moskalev A.I., Sushkov O.I. // Coloproctology. - 2018. No. 2. - P. 102-110.
11. Martynyuk V.V. Incidence of colon cancer // Russian journal of oncology. No. 4, 2000. – p. 44–48.
12. Musoev D.A. Radical one-stage operations for intestinal obstruction caused by a tumor of the left half of the colon (Current state of the problem) // Bulletin of Avicenna. 2017. – p. 399–406.
13. Navruzov S.N. Optimal terms of surgical rehabilitation of patients after resection of the colon with removal of the colostomy / Navruzov S.N., Abdujaparov S.B. Materials of the 2nd Congress of Coloproctologists of Ukraine from the Intern. participation. 2006. – p. 202.
14. Nosirov M.M. Ways to improve surgical tactics for volvulus of the sigmoid colon in the elderly // Abstract of the thesis. diss. cand. honey. Sciences. Tashkent. 2019. – p. 22.
15. Pavlov E.V. Two cases of bowel resection // Proceedings and protocols of the society of doctors in St. Petersburg, 1886–1887. – p. 158.
16. Pakhomova G.V., Uteshev N.S., Podlovchenko T.G., Selina I.E., Platonova G.A., Skvortsova A.V. The choice of the volume of surgical intervention for obstructive obstruction of the colon // Surgery. 2003. – p. 55–59.
17. Petrov V.I. Emergency surgery for colon cancer. Minsk, 2010. – p. 180.
18. Protasov A.V., Sergeev A.A. T-shaped anastomosis in cancer of the left half of the colon, complicated by colonic obstruction // Moscow surgical journal. 2011. – p. 48–51.
19. Sergeev A.A. Primary T-shaped anastomosis in acute left-sided obstructive colonic obstruction of tumor genesis // PhD thesis. Moscow. 2013. – p. 20.
20. Totikov V.Z., Medoev V.V., Totikov Z.V., Kalitsova M.V. Results of treatment of patients with volvulus of the sigmoid colon. Coloproctology. 2017. – p. 84–84.
21. Khanevich M.D., Shasholin M.A., Zyazin A.A. colorectal cancer. Preparation of the colon for surgery. M.: Med. Expert Press; Petrozavodsk: Intel. Tek., 2003. – p. 136.
22. Khojaev A.A. Reconstructive surgical rehabilitation of patients with colorectal cancer // Bulletin of Surgery of Kazakhstan. 2017. – p. 51–59.
23. Tsarkov P.V., Tulina I.A., Tsugulya P.B., Kochetkov V.S. The choice of the method of forming a preventive intestinal stoma after rectal resection: protocol of a prospective multicenter randomized clinical trial. Russian Journal of Gastroenterology, Hepatology, Coloproctology. 2017. – p. 102–110.



24. Zeidler T.F. Materials for the pathology and therapy of acute intestinal obstruction. – Chronicle of Russian surgery. 1898. – p. 28–29.
25. Cherkasov M.F., Dmitriev A.V., Groshilin V.S. Failure of the colorectal anastomosis: risk factors, prevention, diagnosis, treatment tactics // Russian Journal of Gastroenterology, Hepatology, Coloproctology. 2019. – p. 27–34.
26. Chissov V.I., Starinsky V.V. Malignant neoplasms in Russia in 2004 (morbidity and mortality). – M.: 2005. – p. 12–16.
27. Shelygin Yu.A., Nagudov M.A., Ponomarenko A.A. Meta-analysis of treatment methods for colorectal anastomosis failure // Surgery. Journal them. N.I. Pirogov. 2018. – p. 30–41.
28. Yakomaskin V.N. Experience in laparoscopic reconstructive operations on the colon. Yakomaskin V.N., Ravich L.D., Semenycheva N.V. // Almanac of the Institute of Surgery. A.V. Vishnevsky. 2019. – p. 368.
29. Yargunin S.A., Pavlenko S.T., Ivanovsky S.O., Kotelevsky E.V. Reconstructive interventions on the colon for cancer // Materials Vseros. scientific-practical. conf. Perm, 2003. – p. 124–126.
30. Abis G.S.A., Stockmann H.B.A.C., Bonjer H.J. Randomized clinical trial of selective decontamination of the digestive tract in elective colorectal cancer surgery (select trial) // Br. J. Surg. Vol. 106, No 4, 2019. – p. 355–363.
31. Beltzer C., Vetter M., Axt S. Einfluss der Darmvor-bereitung auf Wundinfektionen und Anastomosen insuffizienzen bei elektiven Kolonresektionen: Ergebnisse einer retrospektiven Studie mit 260 Patienten // Der Chirurg. Vol. 91, No 6, 2020. – p. 491–501.
32. Correa Martinez A. Stoma-related complications: a report from the Stoma-Const randomized controlled trial. Colorectal Dis. 2020, Dec 16. 10.1111/codi.15494.
33. Gustafsson U.O., Scott M.J., Hubner M. Guidelines for perioperative care in elective colorectal surgery: Enhanced recovery after surgery society recommendations: 2018 // World J. Surg. Vol. 43, No 3. 2019. – p. 659–695.
34. Hartmann P.H. Nouveau procedure ablation des cancers de la partie terminale du colon pelvien // XXX Congress Francais de Chirurgie Process – Verbeaux, Memoires et Discussion. 1921. – p. 411.
35. Massimo Sartelli, Dieter G. Weber, Yoram Kluger. 2020 update of the WSES guidelines for the management of acute colonic diverticulitis in the emergency setting // World J. Emerg. Surg. Vol. 15, No 1, 2020. – p. 32.
36. Mikulicz J.V. Chirurgisch Erfahrung uber das Damicarcinom. Arch. Klin. Chir. 2003. – p. 28–47.
37. Pillore H. Pratique en 1776, – Gaz d1 hop. Vol. 2, No 2, 1940. – p. 22.
38. Rankin F.W., Graham A.S. Cancer of the Cobon and Rectum. Springfield, 1945. –p. 346.
39. Schardey H.M., Rogers S., Schopf S.K. Are gut bacteria associated with the development of anastomotic leaks? A review of experimental and clinical studies // Coloproctology. Vol. 39, No 2, 2017. – p. 94–100.
40. Schloffer H. Zur operationen Behandlung des Dickdarm-Carcinoms. Drdzeitige Radikaloperation. – Beitz. Zur. clin. Chir. Vol 38, No 1, 1903. – p. 150–191.
41. Vologdin A.A., Lichtenman B.L. Operation Gartman: History and Modern Reguiremntnts. Military Medical Journal. 2015.

Cite this Article: Mamadiev A.M., Khodjimatom G.M., Turgunov A.A. (2022). History of Issue, Epidemiological and Surgical Aspects of Acute Large Bowel Obstruction of Tumoral Genesis. International Journal of Current Science Research and Review, 5(10), 3878-3882