

<https://doi.org/10.22416/1382-4376-2024-1079-2900>  
UDC 616.33-089.168.1-089.87-06:616.329-007.253-089



# Surgical Treatment of Esophagoenteroanastomosis Leakage after Total Gastrectomy

Ivan N. Peregorodiev<sup>1</sup>, Igor A. Zaderenko<sup>1</sup>, Kazbek A. Batyrov<sup>1\*</sup>, Sergey N. Nered<sup>1,2</sup>

<sup>1</sup> National Medical Research Center of Oncology named after N.N. Blokhin, Moscow, Russian Federation

<sup>2</sup> Russian Medical Academy of Continuous Professional Education, Moscow, Russian Federation

**Aim:** to present the difficulties of the choice of surgical tactics in case of esophagoenteroanastomosis suture failure after gastrectomy.

**Key points.** In patient K., 55 years old, after a planned surgical intervention involving gastrectomy for stomach cancer, leakage of the esophagoenteroanastomosis sutures was noted. An attempt to re-form the esophageal-intestinal anastomosis did not lead to success, despite the early stages of relaparotomy, therefore, in order to relieve purulent complications, it was decided to take the path of "disconnecting" the esophagus, for which the cervical esophagus was transected and brought out in the form of two stomas, and the distal end of the esophagus was sutured tightly. Adequate drainage of the esophageal stump area and disconnection of the esophagus at the cervical level made it possible to avoid purulent complications in the abdominal cavity. The reconstructive stage was performed after 6 months in the amount of a colonic insert between the distal esophagus and the jejunum and plastic surgery of the esophagus using a skin insert in the neck.

**Conclusion.** The chosen treatment tactics was determined by the impossibility of conservative treatment of the suture failure of the esophageal-intestinal anastomosis due to ischemic disorders and necrosis of the small intestine anastomosed with the esophagus. Disconnection of the esophagus after repeated suture failure of the esophageal-intestinal anastomosis seemed to be the only chance to stop the flow of esophageal contents into the abdominal cavity and thereby eliminate the source of purulent complications. The esophagoplasty option used turned out to be the safest and allowed to save the patient's life.

**Keywords:** gastric cancer, gastrectomy, esophagoenteroanastomosis leakage

**Conflict of interest:** the authors declare no conflict of interest.

**For citation:** Peregorodiev I.N., Zaderenko I.A., Batyrov K.A., Nered S.N. Surgical Treatment of Esophagoenteroanastomosis Leakage after Total Gastrectomy. Russian Journal of Gastroenterology, Hepatology, Coloproctology. 2024. <https://doi.org/10.22416/1382-4376-2024-1079-2900>

## Хирургическое лечение несостоятельности эзофагоэнтероанастомоза после гастрэктомии

И.Н. Перегородиев<sup>1</sup>, И.А. Задеренко<sup>1</sup>, К.А. Батыров<sup>1\*</sup>, С.Н. Неред<sup>1,2</sup>

<sup>1</sup> National Medical Research Center of Oncology named after N.N. Blokhin, Moscow, Russian Federation

<sup>2</sup> Russian Medical Academy of Continuous Professional Education, Moscow, Russian Federation

**Цель:** представить сложности выбора хирургической тактики при несостоятельности швов эзофагоэнтероанастомоза после гастрэктомии.

**Основные положения.** У пациента К., 55 лет, после планового оперативного вмешательства в объеме гастрэктомии по поводу рака желудка отмечена несостоятельность швов эзофагоэнтероанастомоза. Попытка повторного формирования пищеводно-кишечного анастомоза не привела к успеху, несмотря на ранние сроки релапаротомии, поэтому для купирования гнойных осложнений было принято решение пойти по пути «отключения» пищевода, для чего шейный отдел пищевода был пересечен и выведен в виде двух стом, а дистальный конец пищевода ушит наглухо. Адекватное дренирование зоны культи пищевода и отключение пищевода на шейном уровне позволили избежать гнойных осложнений в брюшной полости. Реконструктивный этап был выполнен через 6 месяцев в объеме толстокишечной вставки между дистальным отделом пищевода и тощей кишкой и пластики пищевода с использованием кожной вставки на шее.

**Заключение.** Выбранная тактика лечения была обусловлена невозможностью консервативного лечения несостоятельности швов пищеводно-кишечного анастомоза из-за ишемических нарушений и некроза анастомозированной с пищеводом тонкой кишки. Отключение пищевода после повторной несостоятельности швов пищеводно-кишечного анастомоза представлялось единственным шансом для прекращения поступления содержимого пищевода в брюшную полость и тем самым устранения источника гнойных осложнений. Примененный вариант эзофагопластики оказался самым безопасным и позволил сохранить жизнь пациента.

**Ключевые слова:** рак желудка, гастрэктомия, несостоятельность эзофагоэнтероанастомоза  
**Конфликт интересов:** авторы заявляют об отсутствии конфликта интересов.

**Для цитирования:** Перегородиев И.Н., Задеренко И.А., Батыров К.А., Неред С.Н. Хирургическое лечение несостоятельности эзофагоэнтероанастомоза после гастрэктомии. Российский журнал гастроэнтерологии, гепатологии, колопроктологии. 2024. <https://doi.org/10.22416/1382-4376-2024-1079-2900>

## Introduction

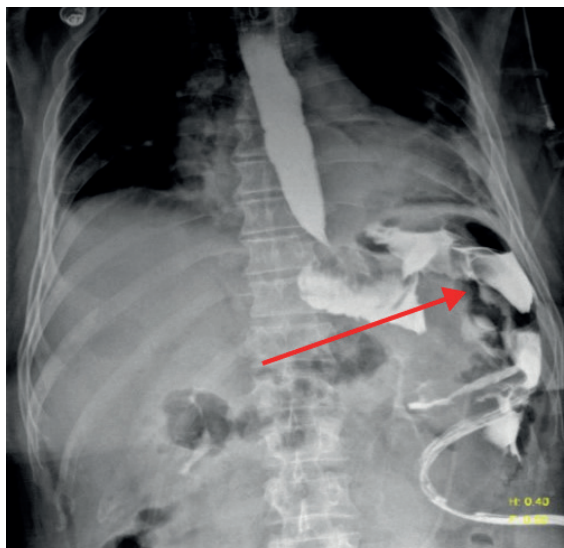
Gastric cancer is one of the most common malignancies in the world. According to GLOBOCAN, more than a million new cases of stomach cancer were detected worldwide in 2020, and 768,693 deaths [1]. Surgery, either as a stand-alone treatment or as a part of combined therapy, is the main approach in the management of localized gastric cancer. However, surgical intervention is associated with risks of postoperative complications, one of which is the failure of the sutures of the esophageal-jejunal anastomosis. According to the literature, the incidence of anastomotic failure after gastrectomy varies from 4.5 to 9.63 % and directly depends on factors such as the experience of the surgeon, the technique of forming the anastomosis, surgical access and the level of intersection of the esophagus [2, 3]. Development and introduction of various methods of formation of esophago-jejunal anastomosis, allows to reduce the incidence of failures of esophageal anastomosis. Thus, the method of forming an anastomosis according to M.I. Davydov, developed at the National Medical Research Center of Oncology named after N.N. Blokhin, reduced the incidence of postoperative complications to 0.49 % [4]. Another reliable method of formation of esophago-jejunal anastomosis is anastomosis according to G.V. Bondar (including as modified by specialists from National Medical Research Center of Oncology named after N.N. Blokhin), in which the rate of suture failure is 1.34 % [2, 5].

## Clinical observation

Patient K., 55 years old, according to a comprehensive examination in National Medical Research Center of Oncology named after N.N. Blokhin has been diagnosed: cancer of the body and proximal part of the stomach cT2N1M0 (cyt-), MSS, HER2/neu — negative. Esophagogastroduodenoscopic findings: behind the cardiac rosette, the proximal border of the tumor infiltrate is determined, which extends to the level of the lower third of the body of the stomach. Findings of endoscopic ultrasound examination: hypoechoic formation emanating from the mucous membrane and spreading to the muscular layer of the stomach wall; metastatic lymph nodes are

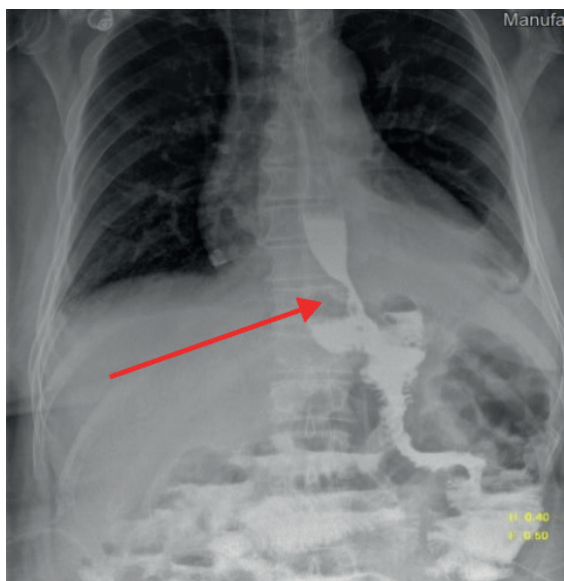
determined paragastrically (uT2N1). Histological examination of the biopsy material showed adenocarcinoma with a signet ring cell component, diffuse type according to Lauren. Computed tomography data of the abdominal organs with intravenous contrast: two metastatic lymph nodes are identified along the lesser curvature of the stomach. A diagnostic laparoscopy was performed — no signs of advanced gastric cancer. As part of the perioperative treatment, 4 courses of chemotherapy were conducted according to the mFOL-FIRINOX regimen. Control examination showed no significant dynamics of the tumor process.

In December 2022, a gastrectomy with D2 lymphadenectomy was performed. Esophagoenteroanastomosis was formed using G.V. Bondar's procedure. On day 4 after surgery, intestinal contents entered the abdominal drainage. No peritoneal symptoms were noted. X-ray with a water-soluble contrast agent showed signs of esophageal anastomosis failure (Fig. 1). Relaparotomy was performed. The intraoperative picture corresponded to ischemia of the terminal portion of the small intestine anastomosed with the esophagus with necrosis and perforation of its stump (Fig. 2). Taking into account the absence of pronounced signs of peritonitis, a decision was made to perform extirpation of the anastomosis with resection of the intestine and the formation of neo-esophagoenteroanastomosis (according to the method of G.V. Bondar). On day 6 after the reoperation, an X-ray control of the esophagoenteroanastomosis was performed: no signs of leakage were detected (Fig. 3). Enteral nutrition was started. However, on day 10 after surgery, against the background of clinical well-being, the flow of intestinal contents through the drainage installed in the abdominal cavity was noted. Abdominal CT scan data with oral contrast: limited accumulation of fluid in the area of esophagoenteroanastomosis (Fig. 4). Endoscopic examination showed a 0.9–1.0 cm defect in the left semicircle of the esophagoenteroanastomosis. The situation was discussed at the board of doctors. Considering the absence of clinical signs of peritonitis, the absence of hyperthermia and leukocytosis, a decision was made on conservative management of the patient with the possible prospect of stenting the area of esophagoenteroanastomosis failure. On day 11, during



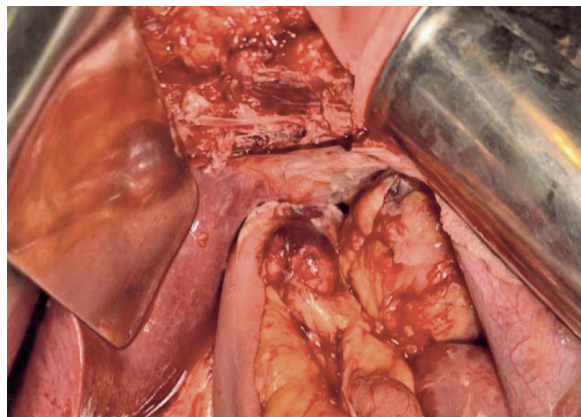
**Figure 1.** X-ray of esophagoenteroanastomosis with water-soluble contrast: signs of anastomotic failure (the red arrow indicates the entry of contrast into the abdominal drainage located in the area of the anastomosis)

**Рисунок 1.** Рентгенография эзофагоэнтероанастомоза с водорастворимым контрастом: признаки несостоятельности анастомоза (красной стрелкой указано попадание контраста в брюшной дренаж, находящийся в области анастомоза)



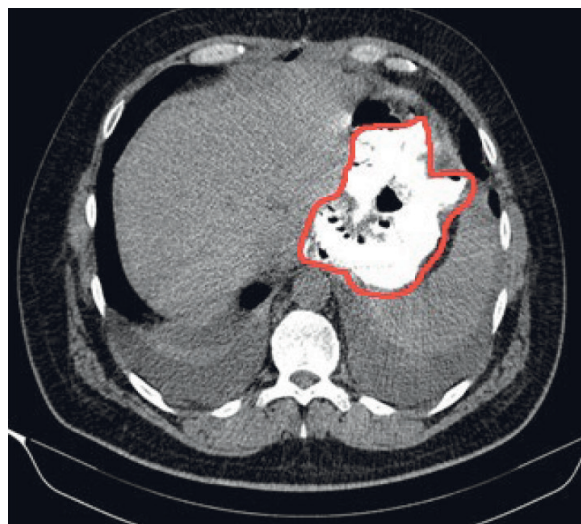
**Figure 3.** X-ray of esophagoenteroanastomosis with water-soluble contrast: no signs of leakage

**Рисунок 3.** Рентгенография эзофагоэнтероанастомоза с водорастворимым контрастом: без признаков несостоятельности



**Figure 2.** Laparotomy wound: intraoperative picture of ischemia of the small intestinal stump in the area of anastomosis with necrosis and perforation

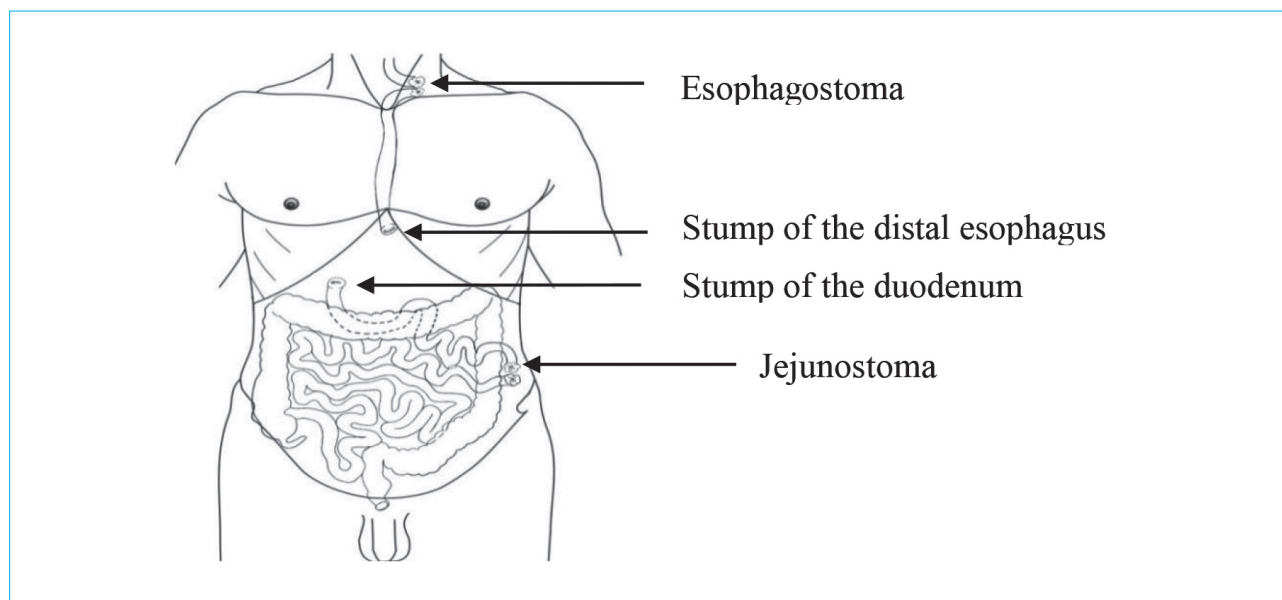
**Рисунок 2.** Лапаротомная рана: интраоперационная картина ишемии культи тонкой кишки в области анастомоза с некрозом и перфорацией



**Figure 4.** Computed tomography of the chest, abdomen and pelvis with oral contrast: limited fluid accumulation in the anastomotic area is visualized

**Рисунок 4.** Компьютерная томография органов грудной клетки, брюшной полости и малого таза с пероральным контрастированием: визуализируется ограниченное скопление жидкости в области анастомоза

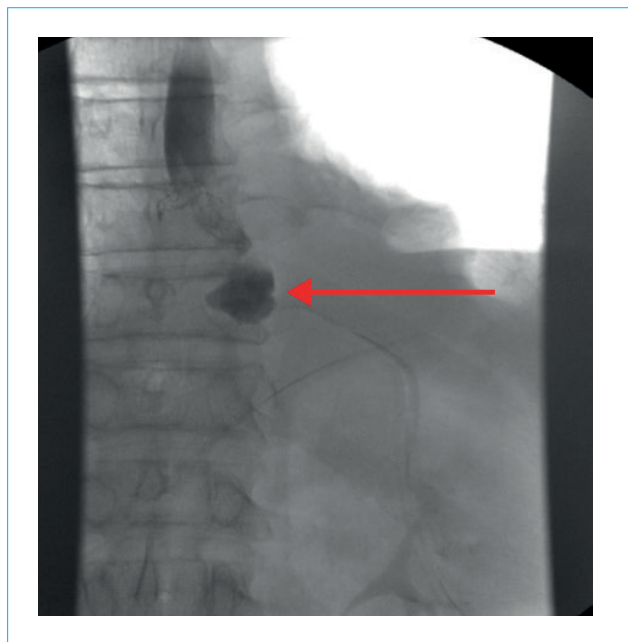
a control study, an increase in the defect to 2.5 cm in diameter was noted; stenting of the anastomosis was impossible. A decision was made to perform an emergency surgical intervention — disconnection of the esophagoenteroanastomosis, suturing of the esophageal stump, formation of a nutritional jejunostomy, esophagostomy (Fig. 5). On day 7 after the second emergency operation, according



**Figure 5.** Schematic representation of the operation: separation of esophagoenteroanastomosis, suturing of the esophageal stump, formation of a nutritional jejunostomy, esophagostomy

**Рисунок 5.** Схематичное изображение операции: разобщение эзофагоэнтероанастомоза, ушивание культи пищевода, формирование питательной еюностомы, эзофагостомы

to radiography with oral contrast, failure of the esophageal stump was noted (Fig. 6). Considering the absence of clinical signs of peritonitis and adequate drainage of the abdominal cavity, a decision was made to continue conservative therapy.



**Figure 6.** X-ray of the esophageal stump with oral contrast: failure of the esophageal stump

**Рисунок 6.** Рентгенография культи пищевода с пероральным контрастированием: несостоятельность культи пищевода

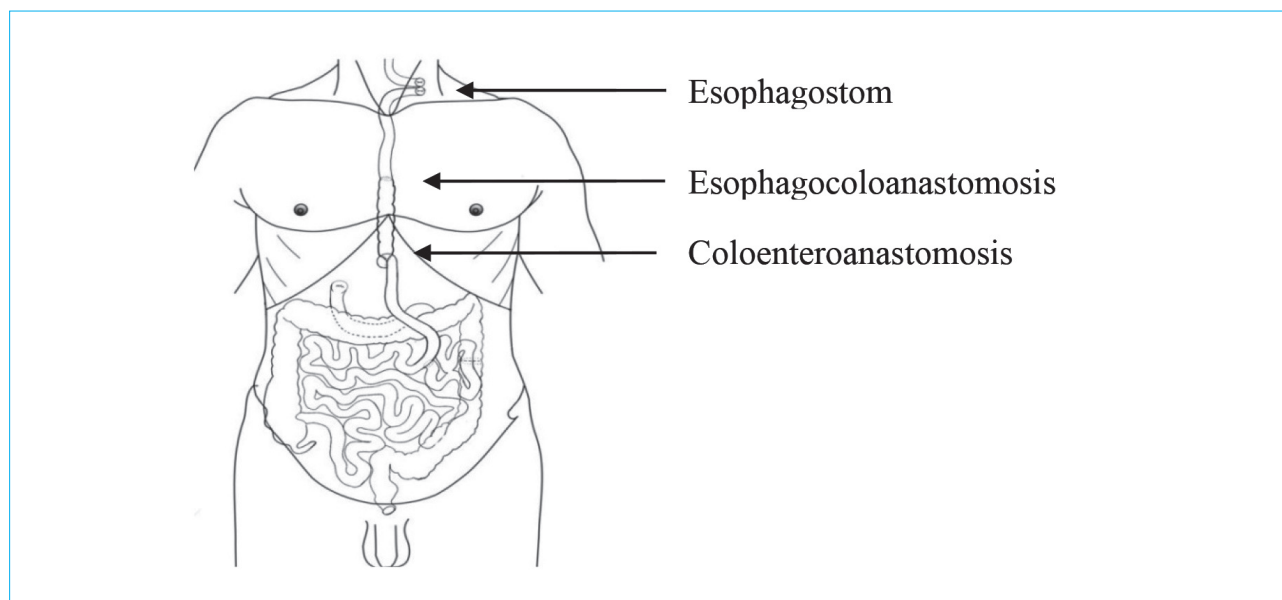
According to the histologic study of the postoperative material the diagnosis was made: cancer of the body and proximal part of the stomach cT2N1M0 (ypT0N0(0/19)M0 (cyt-), R0, TRG-1, Pn0, V0, L0), MSS, HER2/neu — negative. The patient was discharged in January 2023 with abdominal drainage.

The patient was able to fully establish care for the esophago- and jejunostomy and nutrition, which ultimately made it possible to approach the issue of performing reconstructive surgery.

In June 2023, the patient underwent a comprehensive examination to exclude the progression of stomach cancer, as well as to assess the technical feasibility of performing reconstructive surgery. The following procedures were performed: CT scan of the chest, abdominal and pelvic organs with intravenous contrast (with visualization of the vascular anatomy of the colon); esophagoscopy; contrast pharyngography. There were no signs of cancer progression.

CT angiography findings: the middle colic artery departs from the right wall of the superior mesenteric artery and is traced to the transverse colon, where in the projection of the splenic angle an anastomosis with small terminal branches of the left colic artery is visualized, the Riolan arc is present, the Moshkowitz artery is not.

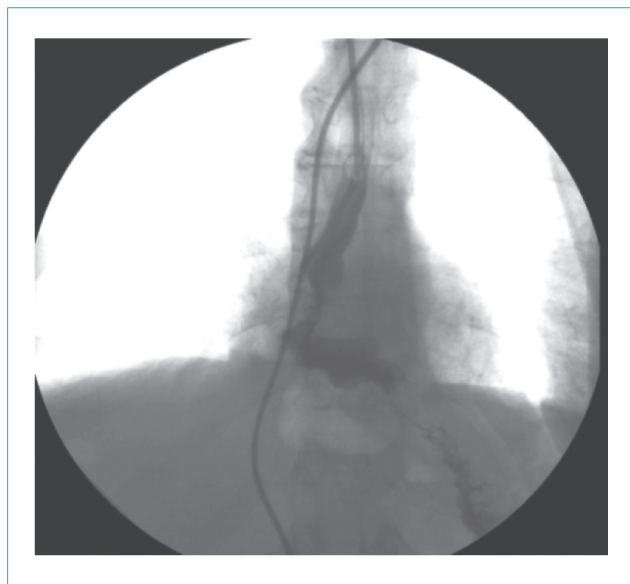
Due to the complicated nature of the clinical course, at the stage of planned surgical treatment, in order to minimize the risk of developing postoperative complications, a decision was made to



**Figure 7.** Schematic representation of the reconstructive phase: insertion of a colonic graft between the distal esophagus and the jejunum

**Рисунок 7.** Схематичное изображение реконструктивного этапа: вставка толстокишечного трансплантата между дистальным отделом пищевода и тощей кишкой

divide the reconstructive intervention into two stages: the first stage — reconstruction using a colonic insert between the terminal end of the esophagus and the jejunum, closure of the jejunostomy; the second stage — the closure of the esophagostomy and plastic surgery of the cervical esophagus.



**Figure 8.** X-ray of esophagocoloanastomosis with water-soluble contrast: no signs of anastomotic leakage

**Рисунок 8.** Рентгенография эзофагоколоанастомоза с водорастворимым контрастом: нет признаков несостоятельности анастомоза

The abdominal-mediastinal stage of reconstruction was performed first: in the posteroinferior mediastinum at the level of the lower pulmonary veins, an esophagocoloanastomosis was formed according to the method of M.I. Davydov. The distal end of the colonic graft is anastomosed with the jejunum in an end-to-side fashion (Fig. 7). On day 8, an X-ray of the esophageal-colic anastomosis was performed: no signs of failure were noted (Fig. 8). Enteral nutrition was started through an esophagostomy.

After 15 days, the second stage was completed — restoration of the continuity and integrity of the cervical esophagus. The distal part of the esophagostomy, after mobilization, together with the medial head of sternocleidomastoid muscle, is sutured end-to-end with the mobilized proximal end of the esophagostomy. The medial head of sternocleidomastoid muscle is used as a coupling to strengthen the end-to-end anastomosis. The proximal part of the double-barreled esophagostomy is sutured using the standard pharyngostoma suturing technique. The skin defect of the neck is closed with a rotationally displaced skin-fat flap on a feeding pedicle. In the postoperative period, inflammation was noted in the area of suturing the proximal esophagostomy with the formation of an esophageal fistula tract. Planned conservative therapy was carried out, the wound in the neck area healed by secondary intention, but stenosis formed in the area where the proximal esophagostomy was sutured. Subsequently, two balloon

dilation procedures were performed with a positive effect.

During the follow-up examination in February 2024: the patient's general condition was satisfactory, full oral nutrition, and an increase in body weight of 10 kg. There were no signs of progression of the underlying disease.

## Discussion

To date, suture failure of the esophageal-intestinal anastomosis remains a life-threatening complication in gastric cancer surgery. Various methods have been proposed to combat this formidable postoperative complication. If previously repeated surgery was considered the method of choice in the treatment of this category of patients, today, due to the accumulation of experience in the use of minimally invasive interventions, preference is given to such methods as re-drainage of the abdominal cavity, endoscopic stenting of esophagoenteroanastomosis, endoscopic clipping of the defect, endoscopic installation of VAC aspirators (vacuum assisted closure) [6–8]. One of the main factors determining the possibility of avoiding aggressive surgery is optimistic data on a reduction in mortality due to failure of esophagoenteroanastomosis sutures by up to 30 % when carrying out “conservative therapy”. Repeated surgery associated with re-anastomosis leads to an increase in mortality to 64.1 % [7].

Let's briefly look at each of the methods described above. Stenting the defect area, according to a number of foreign authors, allows for a cure in 77 % of cases [6]. However, despite such optimistic results, this method has limitations and complications: stent migration; excessive expansion of the stent, leading to an increase in the defect in the anastomotic area, etc. The transesophageal VAC aspiration method, proposed in the early 2000s, achieves a positive result in 90 % of cases, but requires a longer stay for the patient in the hospital and periodic replacement of the sponge [7]. Endoscopic clipping of the defect is also a fairly effective method for resolving esophagoenteroanastomosis suture failure. However, it is worth noting that this method has limitations in the presence of pronounced inflammatory changes in tissues. Clipping is performed using a clip application system (over-the-scope clip, OTSC); as literature data show, the successful use of this technique has been demonstrated in 73.3 % of cases [8]. The use of all of the above methods is impossible without adequate drainage of the area of anastomotic failure.

If it is impossible to use, for objective reasons, minimally invasive methods, the surgical method of treatment remains in the arsenal of specialists. The reasons may be of an organizational and

methodological nature (lack of necessary equipment, consumables, experience in using these types of interventions in the clinic), or be associated with the large size of the anastomosis defect, the diffuse nature of peritonitis, and the ineffectiveness of minimally invasive methods. In such cases, repeated surgical intervention is resorted to. Although the operation is associated with a high risk of developing postoperative complications, the surgeon can count on a positive outcome, especially if the complication is diagnosed early, and the clinic has experience in this type of intervention and an organizational structure that includes specialists of various diagnostic and treatment profiles. A separate aspect remains the choice of the scope of repeated surgical intervention: suturing the defect, re-forming the esophageal-intestinal anastomosis or additional drainage. Most specialists have a negative attitude towards suturing the defect or re-forming the esophageal-intestinal anastomosis due to their ineffectiveness, although the experience of treatment at the National Medical Research Center of Oncology named after N.N. Blokhin points to individual successful treatment results if this approach is chosen in the early stages of the development of incompetence.

In the presented clinical case, an attempt to re-form the esophageal-intestinal anastomosis did not lead to success, despite the early stages of re-laparotomy, therefore, to relieve purulent complications, the esophagus was “disconnected”, for which the cervical esophagus was transected and brought out in the form of two stomas, and the distal end of the esophagus is sutured tightly. The subsequent failure of the sutures of the esophageal stump indicates the low effectiveness of this technique. It may have been sufficient to isolate the distal end of the esophagus with a purse-string suture around the drainage tube. Nevertheless, adequate drainage of the esophageal stump area and “disconnection” of the esophagus at the cervical level made it possible to avoid the development of purulent complications in the abdominal cavity.

It was possible to begin the reconstructive stage after a 6-month recovery period, during which the patient was fed through a jejunostomy. Two options for restoring the continuity of the digestive tract were considered: colonic total retrosternal esophagoplasty with the formation of esophagocoloanastomosis in the neck and coloenteroanastomosis in the abdominal cavity, and esophageal plastic surgery using a skin insert in the neck and a colonic insert between the distal esophagus and the jejunum. The first option was rejected because CT angiography data raised doubts that the architectonics of the colon vessels would be able to provide adequate blood supply to a long colonic graft. The second option was chosen as it is safer, despite

the high incidence of scar strictures at the level of the skin insert on the neck. The chosen treatment tactics were determined by the impossibility of conservative treatment of suture failure of the esophageal-intestinal anastomosis due to the high probability of ischemic disorders and necrosis of the small intestine anastomosed with the esophagus. "Disconnection" of the esophagus after repeated failure of the sutures of the esophageal-intestinal anastomosis seemed to be the only chance to stop the flow of esophageal contents into the abdominal

cavity and thereby eliminate the source of purulent complications. There is no description in the literature of similar approaches to the treatment of suture failure of the esophageal-intestinal anastomosis in case of ineffectiveness of other methods. The applied version of esophagoplasty may still require periodic use of endoscopic recanalization of the cervical esophagus, but it turned out to be the safest and allowed to save the patient's life. Our experience may be useful for specialists in the field of abdominal and thoracic surgery.

### Литература / References

1. Sung H., Ferlay J., Siegel R.L., Laversanne M., Soerjomataram I., Jemal A., 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):209–49. DOI: 10.3322/caac.21660
2. Давыдов М.И., Тер-Аванесов М.Д. Современная стратегия хирургического лечения рака желудка. *Современная онкология.* 2000;2(1):4–10. [Davydov M.I., Ter-Avanesov M.D. Modern strategy for surgical treatment of gastric cancer. *Journal of Modern Oncology.* 2000;2(1):4–10 (In Russ.).]
3. Давыдов М.И., Туркин И.Н., Полоцкий Б.Е. Современная хирургия рака желудка: от D2 к D3. *Материалы IX Российского онкологического конгресса.* М., 2005:41–3. [Davydov M.I., Turkin I.N., Polotsky B.E. Modern surgery of gastric cancer: from D2 to D3. *Proceedings of IX Russian Oncological Congress.* Moscow, 2005:41–3. (In Russ.).]
4. Давыдов М.М., Абдуллаев А.Г., Малихова О.А., Цыганкова А.В. Способ лечения несостоятельности пищеводно-желудочного анастомоза. Клиническое наблюдение. *Сибирский онкологический журнал.* 2019;18(4):102–5. [Davydov M.M., Abdullaev A.G., Malikhova O.A., Tsigankova A.V. New treatment option for esophagogastric anastomotic leak: A case report. *Siberian Journal of Oncology.* 2019;18(4):102–5. (In Russ.).] DOI: 10.21294/1814-4861-2019-18-4-102-105
5. Клименков А.А., Губина Г.И., Неред С.Н., Итин А.Б., Кулаевская В.П., Баронин А.А. и др. Погружные пищеводно-кишечные анастомозы в хирургическом лечении рака желудка. *Вопросы онкологии.* 1998;44(5):576–9. [Klimenkov A.A., Gubina G.I., Nered S.N., Itin A.B., Kulaevskaia V.P., Baronin A.A., et al. Submersible esophageal-intestinal anastomoses in the surgical treatment of gastric cancer. *Problems in Oncology.* 1998;44(5):576–9. (In Russ.).]
6. Иванов А.И., Попов В.А., Бурмистров М.В. Эндоскопическое стентирование при несостоятельности пищеводных анастомозов (обзор литературы). *Вестник хирургии имени И.И. Грекова.* 2021;180(3):87–93. [Ivanov A.I., Popov V.A., Burmistrov M.V. Endoscopic stenting for esophageal anastomoses leakage (review of literature). *Grekov's Bulletin of Surgery.* 2021;180(3):87–93. (In Russ.).] DOI: 10.24884/0042-4625-2021-180-3-87-93
7. Dasari B.V., Neely D., Kennedy A., Spence G., Rice P., Mackle E., et al. The role of esophageal stents in the management of esophageal anastomotic leaks and benign esophageal perforations. *Ann Surg.* 2014;259(5):852–60. DOI: 10.1097/SLA.0000000000000564
8. Haito-Chavez Y., Law J.K., Kratt T., Arezzo A., Verara M., Morino M., et al. International multicenter experience with an over-the-scope clipping device for endoscopic management of GI defects (with video). *Gastrointest Endosc.* 2014;80(4):610–22. DOI: 10.1016/j.gie.2014.03.049

### Information about the authors

**Ivan N. Peregorodiev** — Cand. Sci. (Med.), Oncologist, Department of Abdominal Oncology N 1, National Medical Research Center of Oncology named after N.N. Blokhin.

Contact information: ivan.peregorodiev@gmail.ru; 115478, Moscow, Kashirskoye road, 24.

ORCID: <https://orcid.org/0000-0003-1852-4972>

**Igor A. Zaderenko** — Dr. Sci. (Med.), Oncologist, Senior Researcher at the Department of Head and Neck Tumors, National Medical Research Center of Oncology named after N.N. Blokhin.

Contact information: igorakis@list.ru; 115478, Moscow, Kashirskoye road, 24.

ORCID: <https://orcid.org/0000-0003-0183-4827>

### Сведения об авторах

**Перегородиев Иван Николаевич** — кандидат медицинских наук, врач-онколог отделения абдоминальной онкологии № 1, ФГБУ «Национальный медицинский исследовательский центр онкологии им. Н.Н. Блохина» Министерства здравоохранения Российской Федерации.

Контактная информация: ivan.peregorodiev@gmail.ru; 115478, г. Москва, Каширское шоссе, 24.

ORCID: <https://orcid.org/0000-0003-1852-4972>

**Задеренко Игорь Александрович** — доктор медицинских наук, врач-онколог, старший научный сотрудник отделения опухолей головы и шеи, ФГБУ «Национальный медицинский исследовательский центр онкологии им. Н.Н. Блохина» Министерства здравоохранения Российской Федерации.

Контактная информация: igorakis@list.ru;

115478, г. Москва, Каширское шоссе, 24.

ORCID: <https://orcid.org/0000-0003-0183-4827>

**Kazbek A. Batyrov\*** — Resident Physician at the Department of Abdominal Oncology N 1, National Medical Research Center of Oncology named after N.N. Blokhin.  
Contact information: batirov.kazbek@mail.ru;  
115478, Moscow, Kashirskoye road, 24.  
ORCID: <https://orcid.org/0009-0003-8502-1256>

**Sergey N. Nered** — Dr. Sci. (Med.), Professor, Oncologist, Leading Researcher at the Department of Abdominal Oncology N 1, National Medical Research Center of Oncology named after N.N. Blokhin; Professor of the Department of Oncology and Palliative Medicine named after Academician A.I. Savitskiy, Russian Medical Academy of Continuous Professional Education.  
Contact information: nered@mail.ru;  
115478, Moscow, Kashirskoye road, 24.  
ORCID: <https://orcid.org/0000-0002-5403-2396>

**Батыров Казбек Ахмедович\*** — врач-ординатор отделения абдоминальной онкологии № 1, ФГБУ «Национальный медицинский исследовательский центр онкологии им. Н.Н. Блохина» Министерства здравоохранения Российской Федерации.  
Контактная информация: batirov.kazbek@mail.ru;  
115478, г. Москва, Каширское шоссе, 24.  
ORCID: <https://orcid.org/0009-0003-8502-1256>

**Неред Сергей Николаевич** — доктор медицинских наук, профессор, врач-онколог, ведущий научный сотрудник отделения абдоминальной онкологии № 1, ФГБУ «Национальный медицинский исследовательский центр онкологии им. Н.Н. Блохина» Министерства здравоохранения Российской Федерации; профессор кафедры онкологии и паллиативной медицины им. академика А.И. Савицкого, ФГБОУ ДПО «Российская медицинская академия непрерывного профессионального образования» Министерства здравоохранения Российской Федерации.  
Контактная информация: nered@mail.ru;  
115478, г. Москва, Каширское шоссе, 24.  
ORCID: <https://orcid.org/0000-0002-5403-2396>

Submitted: 30.03.2024 Accepted: 07.07.2024 Published: 30.06.2024  
Поступила: 30.03.2024 Принята: 07.06.2024 Опубликовано: 30.06.2024

\* Corresponding author / Автор, ответственный за переписку