УДК 616.34-007.253-06-089.844 doi:10.25298/2221-8785-2026-24-2-204-207

MANAGING SURGICAL COMPLICATIONS: A CASE OF ENTEROCUTANEOUS FISTULA FOLLOWING RECURRENT HERNIOPLASTY

A. R. Obuhovich[1], N. N. Silva[1], F. A. Samidon[1], S. V. Zhdonets[2]

[1]Grodno State Medical University, Grodno, Belarus

[2]Grodno University Clinic, Grodno, Belarus

Enterocutaneous fistulas (ECFs) are pathological connections between the skin and gastrointestinal tract that often develop following abdominal surgeries such as ventral hernia repairs. The formation of ECF is a manifestation of complication arising after hernioplasty with a reported incidence of 1-5%. Hernia type and its anatomical complexities, adopted surgical techniques and comorbidities together with patient's health status are factors that govern the development of ECF. The sublay method of hernioplasty is found to have lower complication rates in comparison to other techniques, but it still contains risks, particularly due to the complexity of the dissection. Understanding these factors is critical for the overall favorable prognosis of the patient's outcome. We present a case of a 65-year-old male who was hospitalized at the Department of Purulent Surgery of Grodno University Clinic (The Republic of Belarus) with a history of complex gastrointestinal tract surgeries, including left-sided hemicolectomy and subsequent hernioplasty, and who developed an ECF at the site of sublay mesh placement used to repair a ventral hernia.

Keywords: *enterocutaneous fistula, hernioplasty.*

For citation: *Obuhovich AR, Silva NN, Samidon FA, Zhdonets SV. Managing surgical complications: a case of enterocutaneous fistula following recurrent hernioplasty. Journal of the Grodno State Medical University. 2026;24(2):204-207. https://doi.org/10.25298/2221-8785-2026-24-2-204-207*

Introduction

Enterocutaneous fistulas (ECFs) are pathological communications between skin and gastrointestinal tract with a multitude of etiologies and curative options [1]. Ventral hernias are defined as non-inguinal, non-hiatal defects within the fascia of the abdominal wall, which can be either congenital or acquired [2].

There's a myriad of courses of action that can be adopted in order to repair ventral hernias. The primarily preferred method is the use of a mesh to fortify defects. These meshes can be placed at different sites, namely onlay, inlay, sublay and underlay [3]. The onlay technique involves the placing of the mesh directly above the abdominal wall defect; however, it is essential to have extensive suturing in order to secure the mesh to the fascia, which evidently makes it more prone to recurrence and seroma formation [4, 5]. When the location of mesh placement is within the edges of the fascia at the site of the hernial defect, it is termed the inlay method; this method does not close the gap but rather bridges it with a mesh [4]. The underlay method also known as inside method requires suturing the mesh to the underside of the defect, thereby evenly distributing the tension, however this method is challenging to perform, as it requires suturing from beneath the fascia [4]. In the sublay technique, the mesh is placed behind the rectus muscle and in front of the posterior rectus sheath [6].

Timmermans L. et al. noticed, that the site of infection occurred significantly less frequently after sublay repair (odds ratio = 2.42; 95% confidence interval, 1.02 to 5.74; I2= 16%; P=0.5) [7]. However regardless of the intraperitoneal placement, omental coverage or closing of the peritoneum, the formation of ECF appears to be rare after incisional hernia repair with polypropylene mesh.

Severity of abdominal injury is the most important factor for fistula formation, the more important factor for ventral hernia development is the duration of absorbable mesh prosthesis closure [9]. We present a case of a 65-year-old male patient who was admitted to the surgical department with ECF at the site of a previous sublay mesh placement used to repair a ventral hernia.

Case Presentation

A 65-year-old male with a body mass index of 27 kg/m^2 was admitted to the Department of Purulent Surgery of the Grodno University Clinic (The Republic of Belarus) with the chief complaint of spontaneous fluid discharge from a skin defect on the anterior wall of the abdomen which was the site of hernia repair (Figure 1).

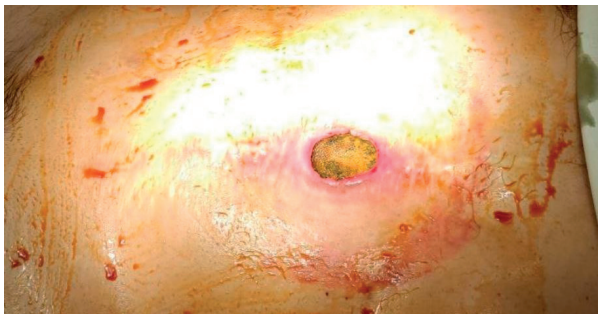

Figure 1 – Skin defect on the anterior wall of the abdomen during admission

Analysis of the patient's past medical history revealed a diagnosis of C18 – malignant neoplasm of the splenic flexure of the colon (T3N1bM0), which required the surgical intervention of a left-sided hemicolectomy, splenectomy and a transverse sigmoid anastomosis of the splenic flexure of the colon in November 2013. A laparotomy was

performed due to the failure of the anastomosis 3 days after the surgery which was followed by the resection of the anastomosis and the formation of a transverse colostomy.

In December 2013 a recolostomy involving laparotomy and drainage of the abdominal cavity was performed due to the failure of the transverse colostomy. Between the years of 2013 and 2014 the patient also underwent six courses of chemotherapy. A resection of the segment of the colon containing the stoma was performed in August 2014 which restored the continuity of the colon. The following year the patient was hospitalized with the diagnosis of a ventral hernia, which necessitated a herniotomy with tension-free hernioplasty using a polypropylene mesh according to the sublay method.

In 2016 during the follow-up examination a left subphrenic abscess was discovered, which was subsequently opened and drained. In 2018 the patient underwent herniotomy with posterior component separation and transabdominal preperitoneal plastic surgery according to D. Yu. Novitsky with the utilization of polypropylene mesh via the sublay technique (Table 1). A month before the admission on August 21, 2024 the patient presented with elevated temperature and swelling of the anterior abdominal wall.

Table 1 **–** Key events of the patient's complex history of surgeries

Operation / Event	Date
Left-sided hemicolectomy, splenectomy, transverse sigmoid anastomosis	November 22, 2013
Anastomosis resection, transverse colostomy, laparostomy	November 27, 2013
Recolostomy, suturing of laparostomy, drainage of abdominal cavity	December 24, 2013
Resection of the section of the colon containing stoma with restoration of colon continuity	August 19, 2014
Herniotomy with tension-free hernioplasty using polypropylene mesh	March 16, 2015
Laparotomy, opening and drainage of the left subphrenic abscess	February 2, 2016
Herniotomy with posterior component separation, transabdominal preperitoneal plastic surgery	August 27, 2018
Opening of intestinal fistula	August 23, 2024
Repeated laparotomy, excision of the infected mesh implant	September 27, 2024
Closure of the enterocutaneous fistula	September 27, 2024

Upon admission, physical examination was conducted which revealed the formation of an ECF through which intestinal contents were discharged (approximately 300 ml/day). Further examination revealed that the site of fistula corresponds to the site of recurrent herniation.

Laboratory workup of the patient was performed and it was revealed that the patient had mild multifactorial anemia (Table 2), which consequently resulted in a transfusion of 650 mL of erythrocytes (O, Rh negative). A colostomy bag was attached to the fistula in order to manage the intestinal discharge.

Table 2 **–** Laboratory results during hospitalization

Parameter	1st day after admission	4th day after operation	10th day after operation	Reference values
RBC, $\times 10^{12}$/l	3,6	3,75	4,27	3,9-5,1
Hct, %	24	27	31.6	35-50
Hb, g/l	81	93	102	130-170
WBC, $\times 10^{9}$/l	11	21	15.2	4-9
PLT, $\times 10^{9}$/l	676	52	812	150-450
CRP, mg/l		95	5	0-6
Amylase, U/l		160	289	25-100
Total protein, g/l		57	67	65-85
Fibrinogen, g/l		6,4	5,4	2,7-4,7

Notations: RBC – Red blood cells, Hct – Hematocrit, Hb – Hemoglobin, WBC – White blood cells, CRP – C Reactive Protein

X-ray examination in four straight lines revealed pneumatized pulmonary fields without focal or infiltrative shadows, the roots and the structures were normal, the aorta was diffusely compacted and moderately dilated in the descending section. Ultrasound examination showed free fluid in the interloop space with layer thickness of up to 10 mm. An elective surgery for reconstruction and restoration of the intestines along with bowel resection was planned. Laparotomy was performed under general anesthesia during which a significant amount of pus mixed with intestinal discharge was drained from the subcutaneous tissue. A mesh implant fixed in the aponeurosis which was soaked in intestinal discharge (Figure 2) was located, isolated from surrounding structures and then excised (Figure 3).

Figure 2 – A mesh implant fixed in the aponeurosis soaked in intestinal discharge

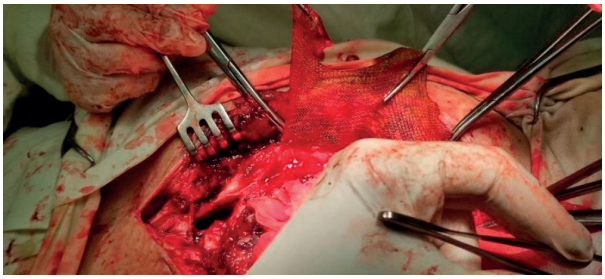

Figure 3. – Excision of the mesh

Furthermore, an additional fragmented mesh was incidentally discovered. This mesh was fixed to the aponeurosis and located under the previously

excised mesh; it was then separated from the surrounding adhesion and removed. The abdominal cavity was found to contain a large conglomerate in the form of a shell, in the center of which there was a small intestinal fistula resembling a double-barrel gun. Total viscerolysis was performed. A dense lymph node approximately 1 cm in size was excised from the intestinal mesentery for histological examination. The loop of intestine containing the fistula located 9 cm distally from the ligament of Treitz was identified and isolated. The loop was edematous with a thickened and infiltrated wall. Due to the high risk of developing further fistulas in this area, it was decided that resection of the segment containing the fistula was needed with a side-to-side anastomosis. The abdominal cavity was irrigated with 7 liters of antiseptic solution and a drainage was placed in the left hypochondrium and small pelvis. It was not possible to tighten the aponeurosis defect; therefore, the abdominal cavity was sutured with interrupted sutures, along PVC tubes, and bandaged appropriately.

During the post-operative period the patient exhibited serious but stable condition remaining conscious and responsive. Initial assessment indicated pain at the surgical site rating 3 on the pain scale; vital signs were monitored closely showing stable blood pressure at 110/60 mm Hg and heart rate of 70 beats per minute with the body temperature fluctuating between 36.4℃ and 36.9℃. No peritoneal irritation or significant distinction was reported. Laboratory results revealed a hemoglobin level of 69 g/L significantly below the normal range, prompting a blood transfusion to address the anemia. Leukocyte count showed a potential inflammatory response (Table 2). The patient received intravenous antibiotics including Ceftriaxone 2.0 g and Metronidazole 5 mg/ml administered every 8 hours as prophylaxis of infection. Vital signs and urine output were continuously monitored and the patient experienced mild oliguria with urine output of 200 ml over 24 hours. The overall focus was to maintain effective pain management, prevent infections and improve prognosis after surgical intervention. The patient was discharged in October 2024.

Discussion

ECF is a frequently encountered complication following abdominal surgery, particularly for hernia. Its formation can lead to adverse outcomes for patients which consequently will require prolonged hospitalization and unjustified cost bearing. Understanding the factors influencing ECF formation, particularly in the context of hernia repair methods, will help to eliminate this complication and improve overall surgical techniques and patient care [10]. The incidence of ECF following hernia repair procedures varies with studies and is reported to range from 1% to 5% [11]. Various factors govern the formation of ECF including the type of hernia (inguinal, umbilical, incisional, femoral, epigastric, hiatal, etc.), surgical technique employed for its management, patients' comorbidities such as obesity, malnutrition and history of previous abdominal surgeries, immuno-status [11]. Patients with the history of herniotomy are especially more likely to be susceptible to fistula formation due to the nature of the procedure and associated hernia recurrence rate. In this respect the Lichtenstein approach and other tension-free mesh repair methods have been linked to lower incidence of ECF [12]. Whereas on the other hand traditional suture repair may increase the likelihood of ECF development since it requires greater bowel manipulation and strain [12]. The sublay method of hernia repair which involves placing the mesh in pre-peritoneal position has also gained popularity due to its reduced incidence of complication. However, it is essential to recognize that while the sublay method is generally associated with favorable outcomes it is not entirely devoid of risk [12]. One study shows that the sublay procedure has a low frequency of complications, with complication rates ranging from 5% to 10% [12]. Seroma development and infections are more commonly seen than ECF as a side effect. Mesh positioned in pre-peritoneal areas lessens the strain on abdominal wall and lowers the possibility of problems from erosion and mesh exposure [12]. Despite this, since the sublay technique requires a more complex dissection and intra-operative time, the potential for surgical trauma is elevated, which in turn can increase the risk of ECF formation [12].

Conclusion

The management of patients with complex medical histories, particularly patients with enterocutaneous fistulas following sublay mesh placement for ventral hernia repair often presents challenges. The risk is elevated at sites of recurrent hernias because such sites are characterized by altered tissue integrity due to previous surgical trauma. Moreover, chemotherapy further complicates this situation by compromising patients' physiological reserves making them less able to tolerate surgeries and prolongs healing time.

Although studies show the subway technique is associated with the lower complication rate, this rate can alter depending on patients' overall health status and surgical history. Emphasis needs to be made on the post-operative management of patients as multiple factors play a role in successful hernioplasty regardless of the technique used. Therefore, the use of antibiotics and infusion therapy in order to reduce the risk of sepsis and to correct the electrolyte imbalances plays a more crucial role in the favorable prognosis especially in patients who have been subjected to chemotherapy and have a complex abdominal surgical history.

References

1. Gefen R, Garoufalia Z, Zhou P, Watson K, Emile SH, Wexner SD. Treatment of enterocutaneous fistula: a systematic review and meta-analysis. *Techniques in coloproctology*. 2022;26(11):863-74. doi: 10.1007/s10151-022-02656-3.
2. Alshamali M, Sallam S, Alzaid D, Abdulraheem J, Mohammad K. Enterocutaneous fistula occurring 10 years

after an open umbilical hernia repair with placement of an onlay polypropylene mesh: A case report. *International Journal of Surgery Case Reports*. 2020;67:123-126. doi: 10.1007/s10151-022-02656-3.
3. Holihan JL, Nguyen DH, Nguyen MT, Mo J, Kao LS, Liang MK. Mesh Location in Open Ventral Hernia Repair: A Systematic Review and Network Meta□analysis. *World Journal of Surgery*. 2016;40(1):89-99. doi: 10.1007/s00268-015-3252-9.
4. Adrales GL. Abdominal Wall Spaces for Mesh Placement: Onlay, Sublay, Underlay. In: Novitsky YW, editor. *Hernia Surgery: Current Principles*. London: Springer International Publishing; 2016. p. 79-87. doi: 10.1007/978-3-319-27470-6_9.
5. Köckerling F. Onlay Technique in Incisional Hernia Repair-A Systematic Review. *Frontiers in Surgery*. 2018;27(5):71. doi: 10.3389/fsurg.2018.00071.
6. Pereira C, Gururaj S. Onlay Versus Sublay Mesh Repair for Incisional Hernias: A Systematic Review. *Cureus*. 2023;15(1):e34156. doi: 10.7759/cureus.34156.
7. Timmermans L, De Goede B, Van Dijk SM, Kleinrensink GJ, Jeekel J, Lange JF. Meta-analysis of sublay versus onlay mesh repair in incisional hernia surgery. *The American Journal of Surgery*. 2014;207(6):980-988. doi: 10.1016/j.amjsurg.2013.08.030.
8. Vrijland WW, Jeekel J, Steyerberg EW, Den Hoed PT, Bonjer HJ. Intraperitoneal polypropylene mesh repair of incisional hernia is not associated with enterocutaneous fistula. *Journal of British Surgery*. 2000;87(3):348-52. doi: 10.1046/j.1365-2168.2000.01364.x.
9. Mayberry JC, Burgess EA, Goldman RK, Pearson TE, Brand D, Mullins RJ. Enterocutaneous Fistula and Ventral Hernia after Absorbable Mesh Prosthesis Closure for Trauma: The Plain Truth. *The Journal of Trauma: Injury, Infection, and Critical Care*. 2004;57(1):157-63. doi: 10.1097/01.ta.0000102411.69521.80.
10. Kunishige T, Takayama T, Matumoto S, Wakatsuki K, Enomoto K, Tanaka T, Migita K, Kuwahara M, Iioka H, Nakajima Y. A defect of the abdominal wall with intestinal fistulas after the repair of incisional hernia using Composix Kugel Patch. *International Journal of Surgery Case Reports*. 2013;4(9):793-797. doi: 10.1016/j.ijscr.2013.05.014.
11. Tonolini M, Magistrelli P. Enterocutaneous fistulas: a primer for radiologists with emphasis on CT and MRI. *Insights Imaging*. 2017;8(6):537-548. doi: 10.1007/s13244-017-0572-3.
12. Leber GE. Long-term Complications Associated With Prosthetic Repair of Incisional Hernias. *Archives of Surgery*. 1998;133(4):378. doi: 10.1001/archsurg.133.4.378.

ЛЕЧЕНИЕ ХИРУРГИЧЕСКИХ ОСЛОЖНЕНИЙ: КЛИНИЧЕСКИЙ СЛУЧАЙ ЭНТЕРОКОЖНОГО СВИЩА ПОСЛЕ ПОВТОРНЫХ ГЕРНИОПЛАСТИК

А. Р. Обухович[1], Н. Н. Силва[1], Ф. А. Самидон[1], С. В. Ждонец[2]

[1]Гродненский государственный медицинский университет, Гродно, Беларусь

[2]Гродненская университетская клиника, Гродно, Беларусь

Энтерокожный свищ (ЭКС) представляет собой аномальное соединение между желудочно-кишечным трактом и кожей, часто возникающее как осложнение абдоминальных операций, таких как пластика вентральных грыж. Формирование ЭКС после грыжесечения является серьезной проблемой, частота которой варьирует от 1% до 5%. Факторами риска развития ЭКС могут быть тип грыжи, выбор хирургической техники и особенности здоровья пациента. Несмотря на то, что пластика по типу sublay связана с более низкой частотой возникновения осложнений по сравнению с другими методами, она все же сопряжена с определенными рисками ввиду сложности проводимой диссекции. Понимание этих факторов имеет решающее значение для улучшения результатов хирургического лечения и послеоперационного ухода за пациентами. Нами представлен случай 65-летнего мужчины с анамнезом множественных операций на желудочно-кишечном тракте, включая левостороннюю гемиколэктомию и последующую герниопластику, у которого развился ЭКС в месте пластики грыжи.

Ключевые слова: *энтерокожный свищ, герниопластика*

Для цитирования: Лечение хирургических осложнений: клинический случай энтерокожного свища после повторных герниопластик / А. Р. Обухович, Н. Н. Силва, Ф. А. Самидон, С. В. Ждонец // Журнал Гродненского государственного медицинского университета. 2026. Т. 24, № 2. С. 204-207. https://doi.org/10.25298/2221-8785-2026-24-2-204-207

Конфликт интересов. Автор заявляет об отсутствии интересов.
Conflict of interest. The author declare no conflict of interest.

Финансирование. Исследование проведено без спонсорской поддержки.
Financing. The study was performed without external funding.

Соответствие принципам этики. Пациент подписал информированное согласие на публикацию своих данных.
Conformity with the principles of ethics. The patient gave written informed consent to the publication of his data.

Об авторах / About the authors
*Обухович Аннета Ромуальдовна / Obuhovich Anneta, e-mail: anneta.panasiuk@gmail.com, ORCID: 0000-0001-5842-0209
Силва Надил Нандул / Silva Nadil Nandul, ORCID: 0009-0003-1069-0631
Самидон Фатима Акила / Samidon Fathima Akeela, ORCID: 0009-0001-3952-2055
Ждонец Светлана Вячеславовна / Zhdonets Svetlana, ORCID: 0009-0004-6607-5459
** – автор, ответственный за переписку / corresponding author*

Поступила / Received: 15.01.2026 *Принята к публикации / Accepted for publication: 18.03.2026*