

First clinical application of Permacol biological mesh in Ukraine. Case report

O. Y. Ioffe, T. V. Tarasiuk, O. P. Stetsenko, M. S. Kryvopustov, P. A. Kobzar

Bogomolets National Medical University, Kyiv

✉ Mykola Kryvopustov: mykola.kryvopustov@gmail.com

O. Y. Ioffe, <http://orcid.org/0000-0002-1306-7920>

T. V. Tarasiuk, <http://orcid.org/0000-0001-6629-3908>

O. P. Stetsenko, <http://orcid.org/0000-0002-2219-653X>

M. S. Kryvopustov, <http://orcid.org/0000-0003-4978-4873>

P. A. Kobzar, <http://orcid.org/0000-0003-2802-674X>

The article presents the first clinical experience in Ukraine of using the Permacol biological implant in the surgical treatment of a giant postoperative ventral hernia in a patient with morbid obesity and an external fistula of the anterior abdominal wall. The study is relevant due to the high incidence of postoperative ventral hernias, particularly after open surgical interventions, and the considerable risk of infectious complications in contaminated surgical fields. Additionally, the absence of standardized guidelines for the combined approach to hernioplasty and bariatric surgery in obese patients remains a significant clinical challenge. A detailed clinical case is presented involving a 63-year-old patient with class III obesity, a giant defect of the anterior abdominal wall aponeurosis, and a chronic external fistula, along with a complicated surgical history that included peritonitis and postoperative wound suppuration. Preoperative management involved intramuscular administration of botulinum toxin type A to relax the anterior abdominal wall muscles, reduce the risk of tissue tension, and prevent abdominal compartment syndrome. The patient underwent herniolaparotomy, viscerolysis, hernioplasty with intra-abdominal placement of the Permacol biological implant using the open intraperitoneal onlay mesh (IPOM) technique, mini-gastric bypass, excision of the anterior abdominal wall fistula, and drainage of both the abdominal cavity and postoperative wound according to Redon. The postoperative period was uneventful, with no evidence of intra-abdominal hypertension or infection. These findings support the feasibility and safety of the Permacol biological implant in patients with complex anterior abdominal wall defects and a high risk of infectious complications.

KEYWORDS

postoperative ventral hernia, hernioplasty, biological mesh.

ARTICLE • Received 2025-11-26 • Received in revised form 2025-12-03 • Published 2025-12-30

© 2025 Authors. Published under the CC BY-ND 4.0 license

Median hernias represent the most prevalent type of hernia affecting the anterior abdominal wall. Notably, up to 5% of these cases are classified as postoperative ventral hernias (PVH) [4]. The overall incidence of PVH after surgery ranges from 2 to 23%.

When abdominal organ surgery is performed using the open technique, PVH occurs in 1 to 16% of patients within the first 2 years postoperatively. In the long term, ten years after surgery, this incidence increases to 20% [2, 6, 10, 17, 24]. Open surgical interventions are associated with a significantly higher incidence of PVH (10.1%) than laparoscopic procedures (4.3%) after 12 months of follow-up, as demonstrated by a meta-analysis of 24 randomized controlled trials involving 3,490 patients [18].

Key factors contributing to PVH include the technique of surgical wound suturing, the application of antibacterial solutions, the presence of comorbid diseases, and episodes of surgical wound infection. In high-risk patients with a combination of several contributing factors, the incidence of PVH can reach up to 69% [21].

The primary treatment for PVH is hernioplasty using a mesh implant. Implants are categorized as synthetic, biological, and composite based on their material composition and the biological tissue response to the mesh. Each mesh type presents distinct advantages and disadvantages. Synthetic meshes offer strong mechanical properties and are relatively inexpensive, but are associated with

increased risk of inflammation, stiffness, soreness, infection, and fistula formation. Composite meshes are preferable for intra-abdominal placement; however, the risk of infection in a contaminated wound is comparable to, or may even exceed, that of synthetic meshes [27].

Biological meshes offer notable advantages over the two previously described types, including a moderate risk of inflammation in surrounding tissues, a low risk of fistula formation, and reduced fibrosis at the site of mesh implantation. However, biological meshes are associated with higher costs and lower mechanical strength than synthetic meshes. Mesh selection should be individualized, considering factors such as mesh position, the presence of infection or wound contamination, including previously installed meshes, and the risk of infection of both the wound and the mesh. Furthermore, managing purulent complications of hernioplasty, particularly when infected synthetic or composite mesh must be removed, may incur significantly higher costs than the initial use of biological mesh [3, 14].

Clinical case

A 63-year-old patient presented with a hernial protrusion at the site of a postoperative scar, the formation of an external purulent fistula in the umbilical region, and discomfort in the right hypochondrium. The body mass index (BMI) was 43 kg/m², consistent with Class III obesity.

Medical history revealed that in 2010, the patient underwent a laparoscopic cholecystectomy for gallstone disease and chronic calculous cholecystitis. The postoperative course was without complications.

On 04/08/2024, the patient underwent laparoscopic Nissen fundoplication combined with gastroplication for the surgical treatment of obesity and hiatal hernia. On postoperative day 4, clinical signs of peritonitis developed, necessitating a second surgical intervention on 04/12/2024. Relaparoscopy revealed perforation of a gastric ulcer; laparoscopic suturing of the gastric wall defect and regastroplication were performed. On 04/26/2024, recurrent signs of peritonitis prompted an urgent median laparotomy. Intraoperatively, perforation of the small intestine wall was detected, most likely secondary to a stress ulcer. The small intestine wall defect was sutured. The postoperative period was complicated by total suppuration of the anterior abdominal wall wound, requiring prolonged inpatient and outpatient treatment.

Within 6 months after the open operation, the patient lost 10 kg; however, her weight returned to baseline after 3 months. One month postoperatively,

a hernial protrusion developed at the site of the postoperative scar and progressively increased in size. Additionally, a fistula opening appeared in the umbilical region along the postoperative scar. The volume and nature of the discharge changed over time, ranging from minimal smears on a napkin to 100 ml per day. The discharge was serous and periodically contained small intestine contents. The patient underwent conservative treatment for the external fistula at the institution where the previous surgeries had been performed.

In July 2025, the patient was evaluated at the Department of General Surgery No2, Bogomolets National Medical University, during an outpatient visit. The patient's general condition was relatively satisfactory. Objective examination revealed recurrent obesity, with a BMI of 43 kg/m². A postoperative scar, measuring up to 25 cm in length, was visualized along the midline of the anterior abdominal wall, extending above and below the umbilicus. Along the entire length of the scar, a hernial protrusion measuring up to 30 cm in width and 25 cm in length was identified. Accurate assessment of the hernial defect size by palpation was complicated by obesity and by a large, densely filled hernial sac containing loops of the small intestine, with visible subcutaneous peristalsis. The hernial hilum measured up to 20 cm in width and 25 cm in length. Laboratory tests showed no pronounced inflammatory changes (leukocytes – 4.7 · 10⁹/L, erythrocyte sedimentation rate – 24 mm/h). Biochemical analysis revealed total bilirubin of 10.9 μmol/L, direct bilirubin of 3.3 μmol/L, ALT of 32 U/L, and AST of 24 U/L. Ultrasound examination (UE) of the abdominal cavity and anterior abdominal wall demonstrated moderate dilation of the intrahepatic bile ducts up to 8 mm and the choledochus up to 20 mm. Video gastroscopy revealed no pathological findings in the stomach or duodenum.

Measurement of the hernial defect size during ultrasound examination with linear and convex sensors was not feasible because the defect width exceeded the sensor's field of view. Ultrasound imaging identified the contents of the hernial sac as loops of the small intestine and bands of the large intestine. Computed tomography (CT) of the abdominal cavity with intravenous contrast revealed the postoperative condition of the stomach after fundoplication and gastroplication, as well as suture material along the greater curvature of the posterior gastric wall. Additionally, CT revealed a midline aponeurotic hernial defect measuring up to 172 mm in width and a hernial sac measuring 264 mm in width. The vertical dimension of the hernial defect reached up to 225 mm. The hernial sac contained

bands of the large intestine, loops of the small intestine, right-sided segments of the large intestine, and the appendix (Fig. 1A).

During CT, fistulography was performed by injecting 20 ml of radiopaque substance (Tomohexol-350) into the external opening of the fistula passage in the umbilical region. Imaging revealed a fistula canal measuring up to 90 mm in length and up to 10 mm in thickness, extending along the lower contour of the hernial sac and within the aponeurosis of the anterior abdominal wall, with a right-sided branch measuring up to 30×12 mm (Fig. 1B, 1C). CT also confirmed expansion of the intrahepatic bile ducts to 5–8 mm, the choledochus to 20 mm, and the intrapancreatic section of the choledochus to 11 mm. Subsequent magnetic resonance cholangiopancreatography with intravenous contrast further confirmed biliary hypertension, with dilation of the common bile duct to 23, 14, and 8 mm. No additional formations or areas of pathological contrast enhancement were detected. These findings were

interpreted as resulting from fibrous narrowing of the ampullary part of the common bile duct.

The patient insisted on the treatment of obesity and PVH recurrence, including removal of the anterior abdominal wall fistula. Given the size of the hernial defect and the high risk of compartment syndrome in the early postoperative period, a decision was made, in agreement with the patient, to perform preoperative preparation with intramuscular injection of botulinum toxin type A (BTA) into the muscles of the anterior abdominal wall. This intervention blocks neuromuscular transmission and induces muscle relaxation. It is a technically simple, low-traumatic method for increasing the elasticity and length of the anterior abdominal wall muscles to facilitate closure of the hernial defect during surgical repair of large ventral hernias, without extensive tension and with reduced risk of increased intra-abdominal pressure [15, 29].

The patient received an outpatient injection of BTA (Botox, USA) at a dose of 100 U, administered in layers into the transverse, external, and internal oblique muscles of the anterior abdominal wall under ultrasound and neurostimulator guidance. No complications were detected during or after the BTA injection. A bandage was recommended until hernia surgery. Although surgery was initially scheduled for 4 to 5 weeks post-injection, it was postponed to 2 months due to family circumstances (Fig. 2).

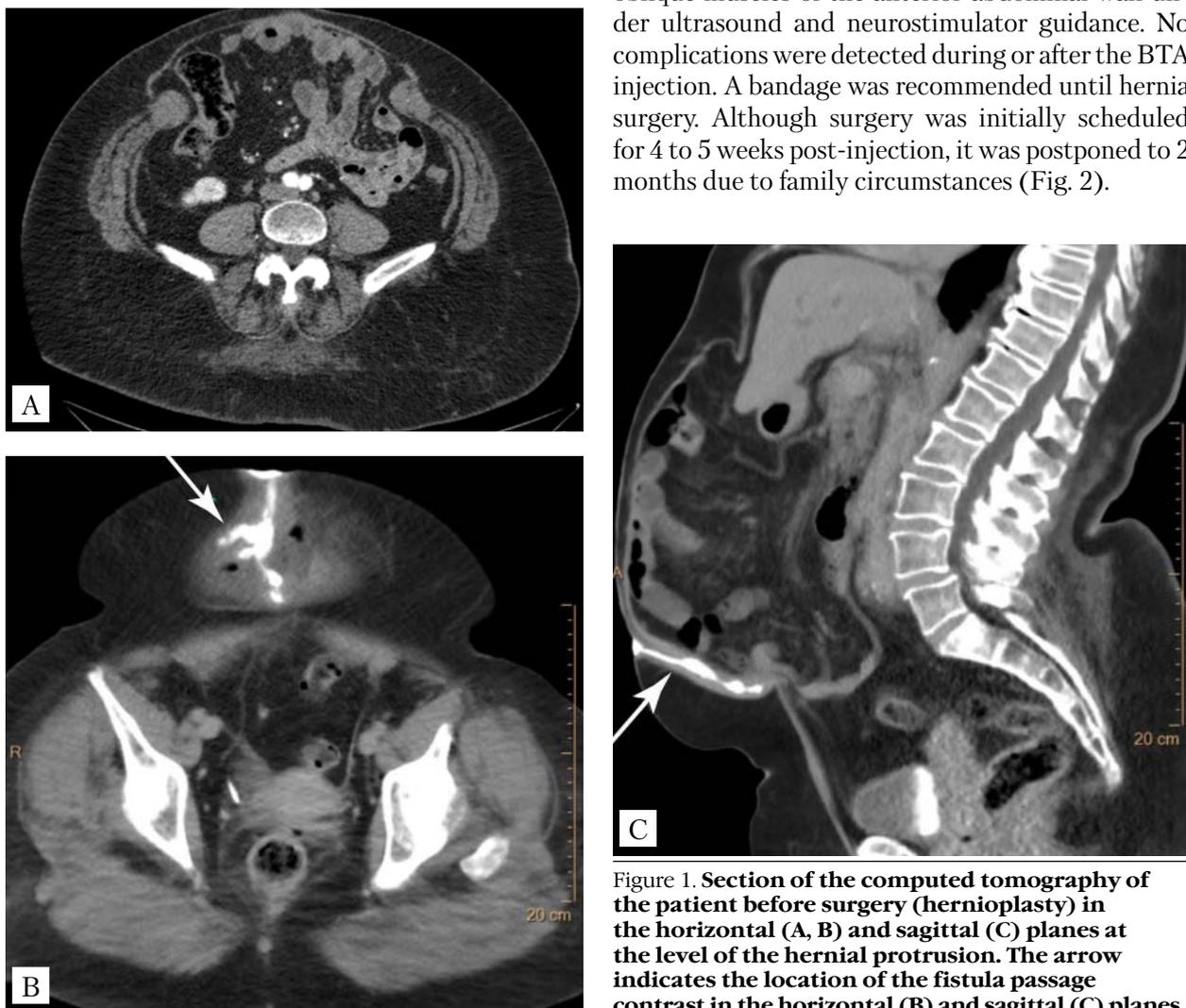


Figure 1. Section of the computed tomography of the patient before surgery (hernioplasty) in the horizontal (A, B) and sagittal (C) planes at the level of the hernial protrusion. The arrow indicates the location of the fistula passage contrast in the horizontal (B) and sagittal (C) planes

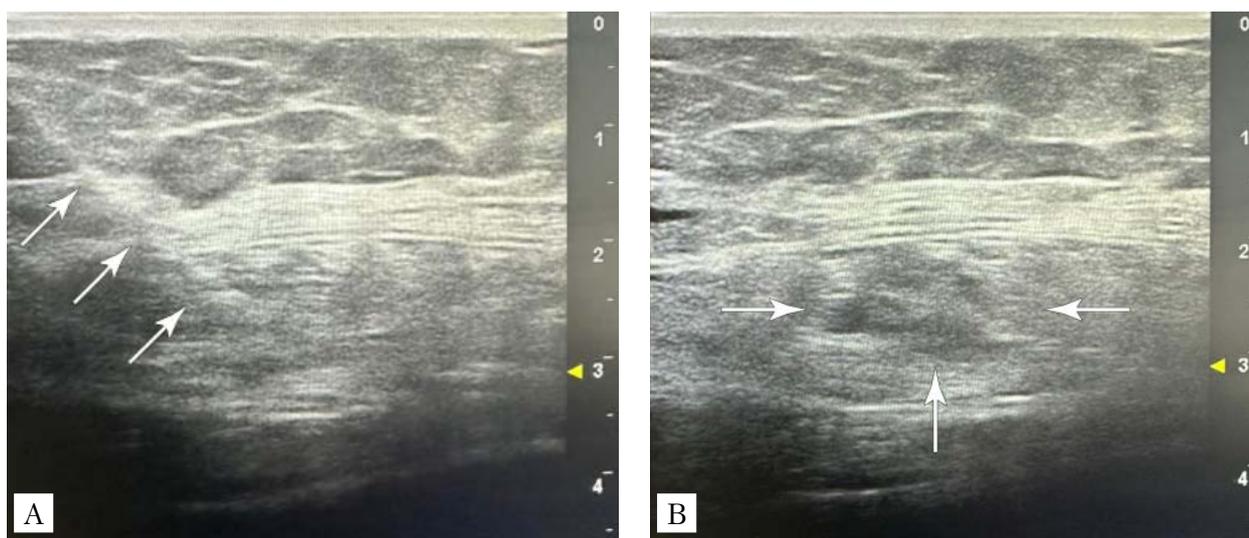


Figure 2. Echogram during puncture of the external oblique muscle of the abdomen under ultrasound control (A) and its infiltration with a solution containing BTA (B). Arrows indicate the needle during muscle puncture (A) and the area of muscle infiltration with a solution containing BTA (B)

Due to the presence of stenosing papillitis and intrahepatic bile duct hypertension, endoscopic retrograde cholangiopancreatography with papilosphincterotomy was performed on 08/27/2025, one month before the planned hernioplasty. A temporary stent was installed in the common bile duct and subsequently removed after 2 weeks. No evidence of recurrent biliary hypertension was observed during the next 2 weeks of monitoring, as assessed by laboratory and ultrasound examinations.

On 09/22/2025, the patient was hospitalized in the surgical department of Kyiv City Clinical Hospital No 3 for management of a giant postoperative ventral hernia, Class III obesity (condition after gastroplication in 04/2024), and an external fistula of the anterior abdominal wall. Examination revealed a decrease in the width of the hernial defect to 10 cm. Mini-gastric bypass was selected as the planned bariatric surgery. Longitudinal gastrectomy was not considered due to prior gastroplication and the ineffectiveness of previous restrictive surgery. Given the potentially contaminated anterior abdominal wall, the extremely high risk of postoperative wound suppuration, and the need to open the stomach and small intestine during anastomotic formation, the use of a biological mesh for anterior abdominal wall reconstruction was indicated.

On 09/23/2025, the patient underwent herniolaparotomy, viscerolysis, hernioplasty with intra-abdominal placement of a Permacol (Medtronic) biological implant using the open intraperitoneal onlay mesh (IPOM) method, mini-gastric bypass, excision of the anterior abdominal wall fistula, abdominal cavity drainage, and postoperative wound drainage

according to the Redon technique. Intraoperatively, the external course of the fistula at the umbilical region was stained with a 1% solution of brilliant green in 3% hydrogen peroxide (1:1), in a volume of 20 ml. After viscerolysis, an infiltrate was visualized within the anterior abdominal wall, extending as a band from the umbilicus along the midline for 5 cm inferiorly. The umbilicus and fistula tract, along with infiltrated tissues, were excised within the margins of healthy anterior abdominal wall tissue.

A pronounced hernial process was observed in the abdominal cavity, involving the stomach and accompanied by multiple adhesions between the loops of the small intestine and the bands of the large intestine. The anterior gastric wall was tightly fixed to the inner surface of the left lobe of the liver. Palpation of the stomach was possible due to prior gastroplication. After viscerolysis and mobilization of the hernial contents (bands of the large intestine, loops of the small intestine, transverse colon, and right parts of the colon), the stomach was released from adhesions. Subsequently, a «small stomach» was created by transversely cutting the stomach at the level of its angle with the Endo GIA stapling device with Tri-Staple technology (Medtronic), 60 mm, black cassette. A pre-colonic gastroenteroanastomosis was constructed 200 cm distal to the Treitz ligament: the posterior lip was formed using the Endo GIA stapling device with Tri-Staple technology (Medtronic), 45 mm, purple cassette, and the anterior lip was completed with a manual double-row suture. After a negative pneumotest, a nasogastric tube was inserted posterior to the gastroenteroanastomosis. The hernia sac was then excised from the anterior abdominal

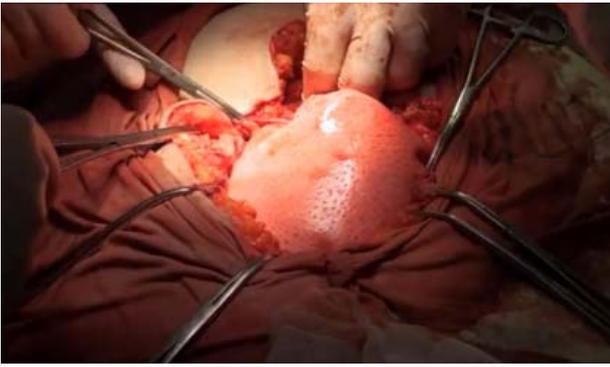


Figure 3. **Intraoperative photo of intra-abdominal hernioplasty using the Permacol biological implant (Medtronic)**

wall, and a site for mesh placement was prepared. Using the IPOM technique, a Permacol (Medtronic) biological implant measuring 20 cm by 30 cm, and 1.5 mm thick, was installed intra-abdominally and secured to the anterior abdominal wall with separate nodal sutures (Fig. 3). The aponeurosis was closed over the mesh with a continuous suture.

After restoration of aponeurosis integrity, intra-abdominal pressure was measured intraoperatively using the indirect method and found to be 13 mm Hg, consistent with Grade I intra-abdominal hypertension. The operation was then completed with layer-by-layer wound closure and drainage placement according to the Redon technique.

Examination and opening of the macropreparation, namely the resected fistula canal with surrounding infiltrated tissues measuring up to 6 × 3 cm, revealed a green polyfilament thread in the form of a rolled-up ball. This finding most likely represented the remains of the ligature used for aponeurosis suturing during the previous surgical intervention (2024).

In the postoperative period, the patient was in the intensive care unit for the first day before transfer to the surgical department. Intra-abdominal pressure was monitored by the indirect method at 6, 12, and 24 hours postoperatively, with no evidence of intra-abdominal hypertension. The patient received antibacterial therapy (ciprofloxacin 200 mg 2 times/day), anti-ulcer therapy (pantoprazole 40 mg 2 times/day), anti-inflammatory therapy (paracetamol 1000 mg 2 times/day), antithrombotic therapy (enoxaparin sodium 4000 anti-Xa IU 1 time/day), and infusion therapy for 5 days. The postoperative period was uneventful. On September 28, 2025, the drainage from the abdominal cavity and anterior abdominal wall was removed. On September 29, 2025, control ultrasound of the abdominal cavity and anterior abdominal wall revealed no

pathological changes. Gastrography with liquid contrast demonstrated no contrast leakage outside the gastrointestinal tract, confirmed viability of the gastroenteroanastomosis, and unimpaired evacuation of contrast from the «small stomach». The patient was discharged in satisfactory condition on September 29, 2025.

Discussion

Biological meshes (implants) with different characteristics and matrix bases have been proposed as alternatives to synthetic meshes in contaminated surgical fields. A biological mesh consists of a collagen matrix derived from animal tissues (porcine, bovine, etc.). The primary function is to provide a biological framework that facilitates integration with the surrounding tissues of the anterior abdominal wall and supports collagen regeneration [3]. Over time, this biological framework (mesh) degrades, with the degradation profile influenced by the mesh matrix type and the specific manufacturing technology employed [25].

Permacol (Medtronic) is a biological surgical implant made of treated porcine dermis used for tissue reconstruction in complex hernia cases. Current guidelines for ventral hernia repair do not recommend the routine use of biological meshes but emphasize their use in clean-contaminated (Class II) and contaminated (Class III) surgical wounds [3, 9, 25]. The use of biological meshes in the urgent treatment of primary PVH in a contaminated (Class III) field is also under consideration [1]. Permacol is one of the most widely used biological meshes. It demonstrates recurrence rates comparable to those of other biological meshes, including both cross-linked and non-cross-linked porcine meshes [25]. In contrast, synthetic meshes are associated with high rates of complications and mesh removal due to suppuration when used in a contaminated surgical field. D. M. Parker et al. reported that the Permacol implant is a safe and acceptable alternative to synthetic meshes for repairing complex anterior abdominal wall defects, as it integrates into tissues through ingrowth and neovascularization [23].

Some studies reported outcomes associated with the use of biological meshes in the surgical treatment of primary ventral hernias, namely umbilical hernias. These studies also highlighted high patient comfort after implantation of this mesh type [11].

A primary argument against the widespread adoption of biological meshes was their higher cost compared to synthetic alternatives. G. DeNoto et al. analyzed complications and treatment costs in 740 patients with ventral hernias over 18 months from the moment of surgery. The cohort included

patients who underwent Grade 3 (potentially contaminated, including those with previous wound infection, stoma, or gastrointestinal tract violation) and Grade 4 (infected, including those with infected mesh and septic dehiscence) hernioplasty. The study found no significant difference in total treatment costs over 18 months between patients receiving biological versus synthetic mesh. However, the complication rate was substantially lower in patients with biological meshes (17.9%) compared to those with synthetic meshes (36.9%) [7].

Concerns have been raised regarding the potential for increased hernia recurrence rates with biological meshes, given their biodegradable nature compared to non-absorbable synthetic meshes [12, 22, 26]. H. Shi et al. conducted a systematic review of 10 studies involving 1,305 patients and found that biological meshes had reoperation and mesh removal rates similar to those of synthetic meshes. Furthermore, no significant difference in hernia recurrence rates was observed between biological and synthetic meshes in clean-contaminated and contamination-infected surgical fields [28]. M. Dirani et al. corroborated these findings, demonstrating that biological mesh use did not affect hernia recurrence rates in contaminated surgical fields or in patients with hernias exceeding 10 cm during a 2-year follow-up. Multivariate analysis indicated that the only factor influencing hernia recurrence was the completeness of fascial closure [8].

Currently, there are no established guidelines regarding the optimal approach for combined surgical interventions in patients with both obesity and ventral hernia. Existing publications on bariatric procedures performed concurrently with hernioplasty report a range of surgical techniques and mesh types [5, 16, 19, 20, 30]. The limited sample sizes, variability in mesh selection, and the lack of implant-specific data hinder systematic analysis. For example, A. Lazzati et al. reported hernia recurrence rates of 25.7% with hernia suturing, 14.3% with biological mesh, and 1.1% with synthetic mesh during combined bariatric and hernioplasty procedures. However, no significant differences were observed in mesh infection rates or the need for reoperation. Notably, these studies do not provide comparative data on the mechanical strength of biological meshes based on implant matrix type.

Randomized controlled trials with adequate sample sizes are necessary to objectively assess the benefits and limitations of biological versus synthetic meshes in simultaneous abdominal wall reconstruction for hernia repair and bariatric procedures such as sleeve gastrectomy and gastric bypass. In current surgical practice, biological meshes are generally preferred when the risk of surgical site infection is high.

Conclusions

In the presented clinical case, preoperative intramuscular injection of BTA combined with the use of the Permacol (Medtronic) biological implant enabled effective anterior abdominal wall reconstruction without excessive tissue tension and facilitated restoration of aponeurotic integrity. The intraperitoneal hernioplasty (IPOM) technique using the Permacol (Medtronic) biological implant represents an effective alternative to synthetic and composite implants in patients with complex postoperative defects and a high risk of infectious complications.

DECLARATION OF INTERESTS

The authors declare no conflict of interest.

AUTHORS CONTRIBUTIONS

O. Y. Ioffe: work concept and design, critical review; T. V. Tarasiuk: work concept and design, data collection and analysis, statistical analysis, writing the manuscript; O. P. Stetsenko: critical review; M. S. Kryvopustov: statistical analysis, writing the manuscript; P. A. Kobzar: data collection and analysis, critical review.

REFERENCES

- Birindelli A, Sartelli M, Di Saverio S, Coccolini F, Ansaloni L, van Ramshorst GH, et al. 2017 update of the WSES guidelines for emergency repair of complicated abdominal wall hernias. *World J Emerg Surg.* 2017;12:37. doi: 10.1186/s13017-017-0149-y.
- Bittner R, Bingener-Casey J, Dietz U, Fabian M, Ferzli GS, Fortelny RH, et al. Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society (IEHS)—Part 1). *Surg Endosc.* 2014;28(1):2-29. doi: 10.1007/s00464-013-3170-6.
- Bougard H, Coolen D, de Beer R, Folscher D, Kloppers J, Koto M, et al. HIG (SA) guidelines for the management of ventral hernias. *S Afr J Surg.* 2016;54(suppl.4):S1–S32.
- Dabbas N, Adams K, Pearson K, Royle G. Frequency of abdominal wall hernias: Is classical teaching out of date? *JRSM Short Rep.* 2011;2(1):1-6. doi: 10.1258/shorts.2010.010071.
- Dantas ACB, Pajecski D, Murakami AHF, Baraviera TM, Kawamoto FM, de Oliveira DRCE, et al. Feasibility of laparoscopic sleeve gastrectomy in patients with severe obesity and complex abdominal wall hernias with loss of domain. *Hernia.* 2025;29(1):170. doi: 10.1007/s10029-025-03380-1.
- Deerenberg EB, Henriksen NA, Antoniou GA, Antoniou SA, Bramer WM, Fischer JP, et al. Updated guideline for closure of abdominal wall incisions from the European and American Hernia Societies. *Br J Surg.* 2022;109(12):1239-1250. doi: 10.1093/bjs/znac302.
- DeNoto G 3rd, Reaven N, Funk S, Willis S. Ventral hernia: Retrospective cost analysis of primary repair, repair with synthetic mesh, and repair with acellular xenograft implant. *Open Access Surg.* 2013;6:23-32. doi: 10.2147/OAS.S44647.
- Dirani M, Chahine E, D'Alessandro A, Chouillard MA, Gumbs AA, Chouillard E. The use of Permacol® biological mesh for complex abdominal wall repair. *Minerva Surg.* 2022;77(1):41-49. doi: 10.23736/S2724-5691.21.08779-4.
- Earle D, Roth JS, Saber A, Haggerty S, Bradley JF 3rd, Fanelli R, et al. SAGES guidelines for laparoscopic ventral hernia repair. *Surg Endosc.* 2016;30(8):3163-3183. doi: 10.1007/s00464-016-5072-x.
- Edmiston CE, Leaper DJ. Intra-operative surgical irrigation of the surgical incision: What does the future hold—saline, antibiotic agents, or antiseptic agents? *Surg Infect (Larchmt).* 2016;17(6):656-664. doi: 10.1089/sur.2016.158.
- Greco DP, Fei L, Guerriero L, Pradella P, Mazzola M, Magistro C, et al. Feasibility and effectiveness of primary umbilical hernia repair with biologic graft: Preliminary study. *Acta Chir Belg.* 2014;114(2):125-130.

12. Harris HW, Primus F, Young C, Carter JT, Lin M, Mukhtar RA, et al. Preventing recurrence in clean and contaminated hernias using biologic versus synthetic mesh in ventral hernia repair. *Ann Surg*. 2021;273(4):648-655. doi: 10.1097/SLA.0000000000004336.
13. Henriksen NA, Montgomery A, Kaufmann R, Berrevoet F, East B, Fischer J, et al. Guidelines for treatment of umbilical and epigastric hernias. *Br J Surg*. 2020;107(3):171-190. doi: 10.1002/bjs.11489.
14. Idrees S, Jindal S, Gupta M, Sarangi R. Surgical meshes—The search continues. *Curr Med Res Pract*. 2018;8:177-182. doi: 10.1016/j.cmrp.2018.08.005.
15. Ioffe OY, Tarasiuk TV, Kryvopustov MS, Stetsenko OP. Management of ventral hernias: Treatment results based on the developed algorithm. *Gen Surg (Ukraine)*. 2024;(4):25-35. doi: 10.30978/GS-2024-4-25.
16. Khataryan A, Miziev I, Mezherits A, Veliev C, Zavgorodnyaya R, Orekhov A, et al. Roux-en-Y gastric bypass and parastomal hernia repair: Case report of concurrent operation in comorbid patient. *Int J Surg Case Rep*. 2020;71:360-363. doi: 10.1016/j.ijscr.2020.05.024.
17. Köckerling F, Hoffmann H, Mayer F, Zarras K, Reinhold W, Fortelny R, et al. What are the trends in incisional hernia repair? Real-world data over 10 years from the Herniamed registry. *Hernia*. 2021;25(2):255-265. doi: 10.1007/s10029-020-02319-y.
18. Kössler-Ebs JB, Grummich K, Jensen K, Hüttner FJ, Müller-Stich B, Seiler CM, et al. Incisional hernia rates after laparoscopic or open abdominal surgery—A systematic review and meta-analysis. *World J Surg*. 2016;40(10):2319-2330. doi: 10.1007/s00268-016-3520-3.
19. Lazzati A, Nassif GB, Paolino L. Concomitant ventral hernia repair and bariatric surgery: A systematic review. *Obes Surg*. 2018;28(9):2949-2955. doi: 10.1007/s11695-018-3366-x.
20. Moolla M, Dang J, Modasi A, Byrns S, Switzer N, Birch DW, et al. Concurrent laparoscopic ventral hernia repair with bariatric surgery: A propensity-matched analysis. *J Gastrointest Surg*. 2020;24(1):58-66. doi: 10.1007/s11605-019-04291-0.
21. Muysoms FE, Antoniou SA, Bury K, Campanelli G, Conze J, Cucurullo D, et al. European Hernia Society guidelines on the closure of abdominal wall incisions. *Hernia*. 2015;19(1):1-24. doi: 10.1007/s10029-014-1342-5.
22. Olavarria OA, Bernardi K, Dhanani NH, Lyons NB, Harvin JA, Millas SG, et al. Synthetic versus biologic mesh for complex open ventral hernia repair: A pilot randomized controlled trial. *Surg Infect (Larchmt)*. 2021;22(5):496-503. doi: 10.1089/sur.2020.166.
23. Parker DM, Armstrong PJ, Frizzi JD, North JH Jr. Porcine dermal collagen (Permacol) for abdominal wall reconstruction. *Curr Surg*. 2006;63(4):255-258. doi: 10.1016/j.cursur.2006.05.003.
24. Pérez-Köhler B, Bayon Y, Bellón JM. Mesh infection and hernia repair: A review. *Surg Infect (Larchmt)*. 2016;17(2):124-137. doi: 10.1089/sur.2015.078.
25. Romain B, Story F, Meyer N, Delhorme JB, Brigand C, Rohr S. Comparative study between biologic porcine dermal meshes: Risk factors of postoperative morbidity and recurrence. *J Wound Care*. 2016;25(6):320-325. doi: 10.12968/jowc.2016.25.6.320.
26. Rosen MJ, Krpata DM, Petro CC, Carbonell A, Warren J, Poulos BK, et al. Biologic vs synthetic mesh for single-stage repair of contaminated ventral hernias. *JAMA Surg*. 2022;157(4):293-301. doi: 10.1001/jamasurg.2021.6902.
27. See CW, Kim T, Zhu D. Hernia mesh and hernia repair: A review. *Eng Regen*. 2020;1:19-33. doi: 10.1016/j.engreg.2020.05.002.
28. Shi H, Wang R, Dong W, Yang D, Song H, Gu Y. Synthetic versus biological mesh in ventral hernia repair and abdominal wall reconstruction. *World J Surg*. 2023;47(10):2416-2424. doi: 10.1007/s00268-023-07067-5.
29. Tarasiuk TV. The first experience of use botulinum toxin type A in the surgical treatment of ventral hernias. *Hospital Surgery. Journal named by L.Ya. Kovalchuk*. 2020;90(2):102-105. doi: 10.11603/2414-4533.2020.2.10775. Ukrainian.
30. Vilallonga R, Beisani M, Sanchez-Cordero S, Garcia Ruiz de Gordejuela A, Rodríguez-Luna MR, Fort JM, et al. Abdominal wall hernia and metabolic bariatric surgery. *J Laparoendosc Adv Surg Tech A*. 2020;30(8):891-895. doi: 10.1089/lap.2020.0257.

Перший в Україні досвід використання біологічної сітки Permacol. Клінічний випадок

О. Ю. Іоффе, Т. В. Тарасюк, О. П. Стеценко, М. С. Кривоустов, П. А. Кобзар

Національний медичний університет імені О. О. Богомольця, Київ

Представлено перший в Україні клінічний досвід застосування біологічного імплантату Permacol при хірургічному лікуванні гігантської післяопераційної вентральної грижі в пацієнтки з морбідним ожирінням та зовнішньою норицею передньої черевної стінки. Актуальність дослідження зумовлена високою частотою післяопераційних вентральних гриж, особливо після відкритих оперативних втручань, а також значним ризиком інфекційних ускладнень у контамінованому операційному полі. Уніфіковані рекомендації щодо поєднаного виконання герніопластики та бариатричних операцій у пацієнтів з ожирінням відсутні. Наведено детальний опис клінічного випадку пацієнтки віком 63 років із ожирінням III ступеня, гігантським дефектом апоневрозу передньої черевної стінки, хронічною зовнішньою норицею з обтяженим хірургічним анамнезом абдомінальних втручань, що супроводжувалися перитонітом і нагноєнням післяопераційної рани. Доопераційна підготовка передбачала внутрішньом'язове введення ботулотоксину типу А для розслаблення м'язів передньої черевної стінки, зниження ризику натягу тканин і профілактики розвитку абдомінального компартмент-синдрому. Пацієнтці виконано герніолапаротомію, вісцероліз, герніопластику з інтраабдомінальним розміщенням біологічного імплантату Permacol (за методикою відкритого інтраперитонеального розміщення сітки — ІРОМ), мінішунтування шлунка, висічення нориці передньої черевної стінки, дренування черевної порожнини, дренування післяопераційної рани за Редоном. Післяопераційний період перебіг без ускладнень. Ознак внутрішньочеревної гіпертензії та інфекції не відзначено. Отримані результати свідчать про доцільність і безпеку застосування біологічного імплантату Permacol у пацієнтів зі складними дефектами передньої черевної стінки та високим ризиком інфекційних ускладнень.

Ключові слова: післяопераційна вентральна грижа, герніопластика, біологічна сітка.

FOR CITATION

Ioffe OY, Tarasiuk TV, Stetsenko OP, Kryvopustov MS, Kobzar PA. First clinical application of Permacol biological mesh in Ukraine. Case report. *General Surgery (Ukraine)*. 2025;(4):49-55. <http://doi.org/10.30978/GS-2025-4-49>.