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Complex Case of Tertiary Peritonitis with Intestinal Fistulas and Stomal Retraction: A Surgical Challenge

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Abstract

Management of tertiary peritonitis, complicated with picture of "frozen abdomen", anterior wall fistulas and anterior abdominal wall defects developed after previous surgical interventions, can be so challenging and lead to unpredictable problems, which are discussed in our case report. We present a complex surgical case of a 44-year-old male patient with a 10-year history of Crohn's disease. Patient underwent several surgical interventions, including hernioplasty, appendectomy and resection of bowel obstruction with terminal jejunostomy formation. Our case report highlights the way surgeons can solve problem with tertiary peritonitis in conditions of presence of high amount of comorbidties and which complications it can cause.

Introduction

Nowadays "frozen abdomen" presents as one of the most complicating and ill-structured surgical conditions. There is relatively small number of described cases of "frozen abdomen" that's why there are no specific guidelines how to manage such patients, so every case is unique. Only 0.5- 3% of laparotomies leas to performing of "frozen abdomen" [1]

and in every single case surgeon should find the most justified and rational decision, taking as a basis the principles of personalized approach to every patient with such a problem.

Case presentation

I want to introduce a clinical case report of tertiary peritonitis with intestinal fistulas and stomal retraction, which became a complication after surgical intervention because of intestinal obstruction.

Patient, male, 44 years old, arrived in ER of Tbilisi First University Clinic in severe condition. Before this patient was treated in clinic in Telavi. He arrived in that clinic's ER after what he was operated because of adhesive obstruction. Postoperative period was complicated by intestine perforation what has led to relaparotomy. However intraoperatively the inflammatory process was diagnosed so it has been decided to conduct a jejunostomal formation. It has been conducted on 02 of November 2024. After presentation of postoperative complications, he was transferred to reanimation, where stayed for 48 days. He arrived in our clinic on 11 of December 2024 in severe condition.

On arrival he was diagnosed with following conditions:

- Acute peritonitis (tertiary) - ICD K65.0
- Perforation of intestine (nontraumatic)- ICD K63.1
- Fistula of intestine – ICD K63.2
- Jejunostomy malfunction – ICD K91.4

During initial examination recognized postoperative wound which is unfolded on 15 cm (Fig. 1). In depth was considered the picture of "frozen abdomen". The end jejunostomy was recognized in left flank, which was complicated with mucocutaneus separation and retraction. Colostomy bag is absent, and stoma is covered with gauze bandage.

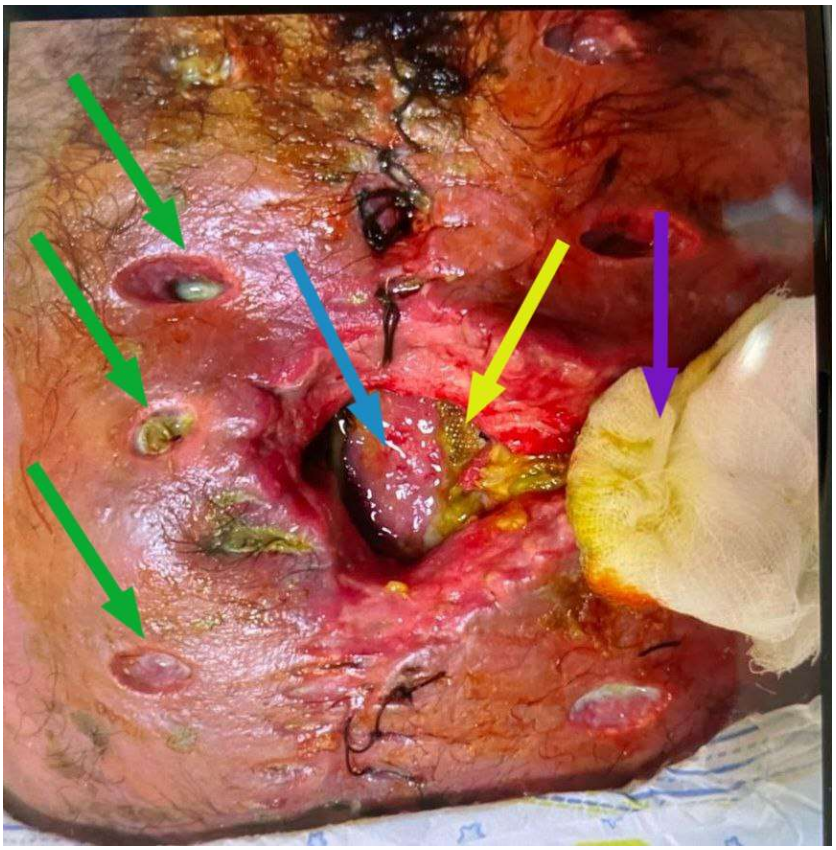


Fig. 1

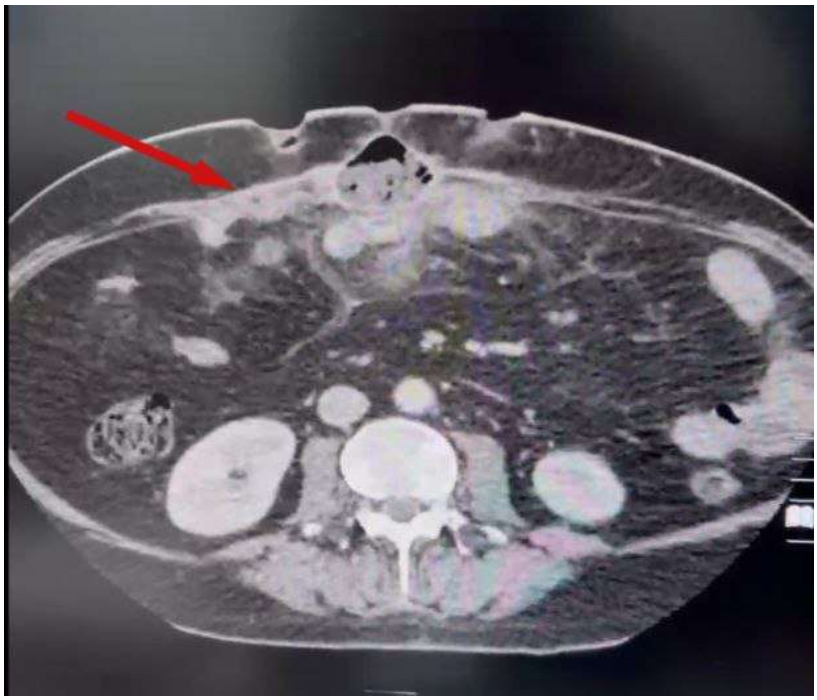
Blue arrow- picture of frozen abdomen; Purple arrow- one channel jejunostomy covered by gauze bandage; green arrows- wide holes on skin with purulent exudate; yellow arrow- mesh after hernioplasty.

There are also wide holes, 4 on both sides of the wound, from which purulent exudate was draining. Deep in the wound multiple intestinal fistulas and infected mesh after hernioplasty were considered. Skin of anterior abdominal wall and subcutaneous fat tissue were edematous and infiltrated. In affected zone the skin was macerated, and picture of contact dermatitis was expressed which was spread on the left flank right up to lower back.

Blood analysis showed following inflammation markers:

- LEUK- 23.14
- PCT- 7
- CRP- 84
- HCT- 29.4

CT of abdominal cavity confirmed existing of multiple fistulas. Radiologist also confirmed impossibility of visualization the border between loops of small intestine and anterior abdominal wall, what approves picture of "frozen abdomen" that was diagnosed earlier. (Fig.2, A and B)


(A)

(B)

Fig. 2 (A) and (B)

CT scan showing the impossibility of visualization the border between loops of small bowel and anterior abdominal wall.

After performing all the diagnostic examinations surgeons made a decision to conduct a surgical intervention.

Steps of operation:

- Access: Relaparotomy, incision 25-30 cm, sutures from previous operation were taken off.
- Bacteriological sample was taken.
- The wound has been rinsed out with antiseptic solution.
- Infected, contaminated, and infiltrated wound edges were revised.
- Insufficient stoma was removed.
- After mobilization of distal part of jejunum, the intestinal clamp was applied; the part of intestine with earlier created stoma was removed.
- After debriment of stoma, challenging synechiolysis was conducted.
- During the synechiolysis, distal end of jejunum and proximal end of the ileum have been mobilized and resected.
- The remaining distal part of ileum (approximately 1m) dressed and sealed tightly.

- After mobilization of proximal end of jejunum (approximately 1m) brought out through a pre-prepared opening in the left mesogastrium. A single-barrel stoma was formed.
- Enterotomy was performed, accompanied by the release of a large amount of chyme.
- Repeated abdominal cavity irrigation was performed. Hemostasis was achieved.
- Drains were placed:
  One silicone drain was exteriorized through a counteropening in the left flank into the left lateral gutter.
  One silicone drain was exteriorized through a counteropening in the right flank into the right lateral gutter.
- The laparotomy wound was closed using interrupted sutures. (Fig.3,4)

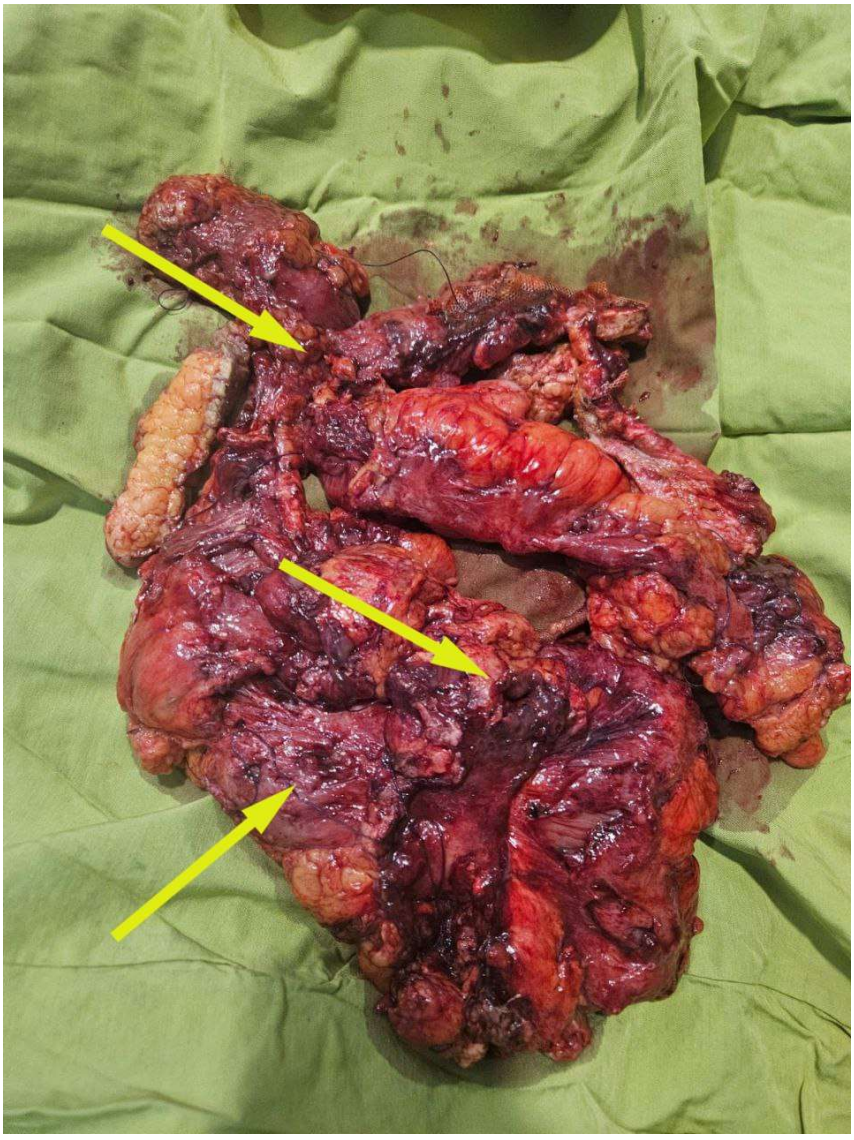


Fig. 3

Fistulas on resected part of intestine (postoperative photo)

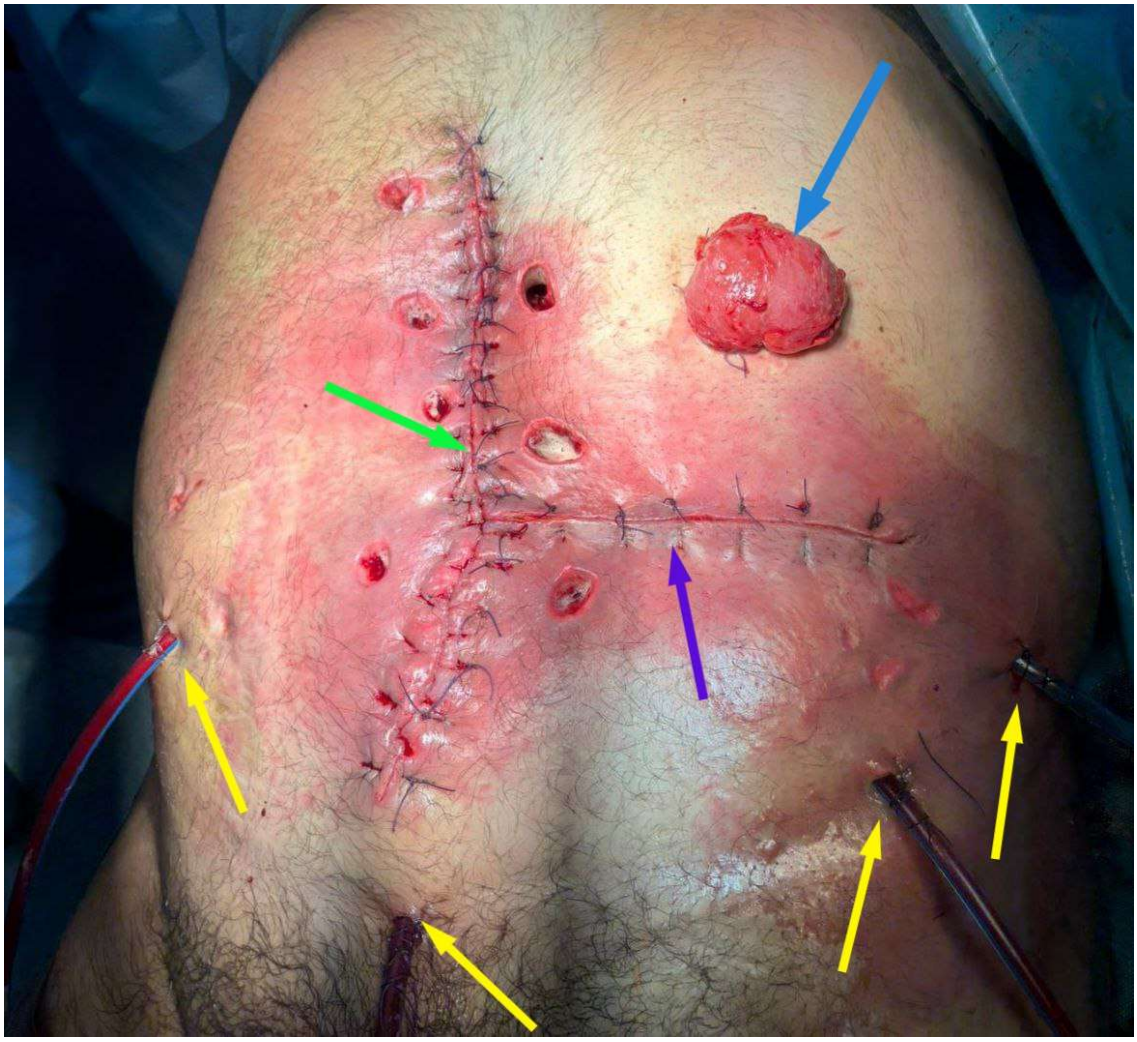


Fig. 4

Blue arrow- new stoma; purple arrow- the previous place of stoma and skin defect, closed with interrupted sutures; green arrow- restored edges of wound with interrupted sutures; yellow arrow- 4 drainages exteriorized through a counteropening on the left and right flank.

As preoperative antibiotic therapy was chosen Ceftriaxone in combination with Metronidazole as common therapy for emergency cases according to guidelines. Bacteriological sample which was taken during operation showed growth of E.coli and Candida spp. Thus, after antibioticogramma he was treated with combination of Vancomycin, Meropenem, Colamicine and Fluconazole.

After operation patient spent 4 days in ICU and on the 5th day was transferred to surgical department. The patient was discharged on 17th day after arrival.

On 22th of January 2025 arrived in our clinic in ICU department because of intestinal malabsorption and pneumonia, complicated with acute kidney and liver failure, shock and anuria. His condition did

not require surgical management. He was provided with conservative treatment. After improvement of his condition, he was discharged from our clinic on 7th day.

On 11th of March, we conducted reconstructive operation, during which we liquidate stoma and formed entero-entero anastomosis.

On the 7th day the patient was discharged in satisfactory condition. Now patient returned to his usual daily activity. (Fig.5)

Fig. 5

Postopertaive picture of fully healed wound after reconstructive operation in 2 months.

Discussion:

Reasons

As we mentioned, the "frozen abdomen" is one of the most unsolvable surgical problems. The reasons of such a catastrophe for both patients and surgeons is a result of open abdomen. In 2013 Lopez-Cano et al. Suggested a concept of "acute postoperative open abdominal wall" (acute POAW) [2]. Our

patient's acute POAW was also complicated with small bowel fistulas. There are 3 conditions that could lead to formation of small bowel fistulas:

1. Iatrogenic serosal laceration or tear during surgery.
2. Adhesions gut-to-gut or gut to the sharp fascial edges.
3. The mechanical irritation.

Classification

Every single case of acute POAW is unique and surgeons should make decisions according to anamnesis and patient's condition on the moment of arrival. To estimate it accurately there are some classifications presented below:

1. Bjork's classification [3]

Stage	Clinical presentation
1A	Clean, no fixation
1B	Contaminated, no fixation
1C	Enteric leak, no fixation
2A	Clean, developing fixation
2B	Contaminated, developing fixation
2C	Enteric leak, developing fixation
3A	Clean, frozen abdomen
3B	Contaminated, frozen abdomen
4	Established enteroatmosphering fistula, frozen abdomen.

Table 1. In our case, the primer examination showed 4th stage of Bjork's classification, later it was confirmed by radiologist according to results of CT.

2. Classification according to amount of secretion [2]

- Low output (<200 ml)
- Moderate output (200-500 ml). Our patient had moderate output
- High output (> 500 ml)

3. Classification according to anatomic origin [2]

- Treitz lig.

- Jejunum
- Ileum

In our patients we considered fistulas in jejunum.

Investigations

Among the ways of investigations, the CT is of the most useful and informative way of preoperative examinations, what we used for our patient. However, in some more severe cases, the fistulography is more comprehensive way to get information about the location, depth, amount and nature of small bowel fistulas.[2]

Treatment recommendations

Before setting the treatment strategy we should determine the current situation and possible pathophysiological consequences of such condition.

Abnormal fluid loses

- Dehydration
- Hypovolemia

Electrolyte disturbance

- Hyponatremia
- Hypokalemia
- Hypochloridemia and etc.

Acid-base imbalance

- Acidosis/ alkalosis

Malnutrition

- Hypoalbuminemia
- Hypoproteinemia
- Vitamin deficiency

Skin/ wound problems around the fistula

- Excoriation

- Contact dermatitis
- Bacterial infection and etc.

According to this information we can highlight some significant points in treatment:

1. Supporting of homeostasis (correction of fluid/electrolyte/acid-base imbalance)
2. Early infection/sepsis treatment (antibiotics/detoxification solutions/ draining of abscesses)
3. Providing of GI tract rest (parenteral nutrition/ usage of *somatostatin* to decrease gastric, biliary, pancreatic and enteric secretion)
4. Control of suction of intestinal contents (measuring the output within 24 hours)
5. Wound care
6. Closure of fistulas (conservatively or surgically by providing resection of part of small bowel part with fistulas) [2]

In our patient we conducted small bowel resection with repeated stomal formation because all conservative methods showed their failure for 48 days while he was treated in another clinic.

Conclusion

Nowadays, the problem of treating of open abdomen either with complications or without, maintains one of most challenging and unsolvable surgical problem, which cannot be decided in conditions of low incidence of such diagnoses and impossibility of creation of specific guidelines. The only way of treating such condition is to consider every case paying high attention to every detail using all available knowledge and learning from mistakes.

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მესამეული პერიტონიტის რთული კლინიკური შემთხვევა ნაწლავის ფისტულებით და სტომის რეტრაქციით : ქირურგიული გამოწვევა.

ემზარ ფიფია[1,2], გიორგი ასათიანი[1,2], ნიკა ხეთაგუროვა[1]

[1]თბილისის სახელმწიფო სამედიცინო უნივერსიტეტი; [2]თსსუ-ის პირველი საუნივერსიტეტო კლინიკა

აბსტრაქტი

მესამეული პერიტონიტის მართვა, რომელიც გართულებულია "გაყინული მუცლის" კლინიკით, მუცლის წინა კედლის ფისტულებით და წინარე ქირურგიული ჩარევების შედეგად განვითარებული მუცლის წინა კედლის დეფექტებით, შესაძლოა იყოს ძალიან რთული და დაკავშირებული არაპროგნოზირებად პრობლემებთან, ეს ყოველივე კი განხილულია ჩვენს კლინიკურ შემთხვევაში.

წარმოდგენილია 44 წლის მამაკაცის რთული ქირურგიულ შემთხვევა კრონის დაავადების 10-წლიანი ანამნეზით. პაციენტს ჩაუტარდა რამდენიმე ქირურგული პროცედურები- მათ შორის ჰერნიოპლასტიკა, აპენდექტომია და ნაწლავის ობსტრუქციის რეზექცია ტერმინალური იეიუნოსტომიის ფორმირებით. ჩვენი კლინიკური შემთხვევა ხაზს უსვამს ქირურგებისთვის მესამეული პერიტონიტის მართვისას წამოჭრილ პრობლემებს ბევრი თანმხლები დაავადების თანაარსებობის და ა დროს მოსალოდნელი გართულებების პირობებში.