



POST-TRAUMATIC ACUTE PANCREATITIS COMPLICATED BY WALLED-OFF PANCREATIC NECROSIS – A CASE REPORT

Pourazowe ostre zapalenie trzustki powikłane zbiornikami
otorbionej martwicy – opis przypadku



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Abstract

Pancreatic injuries are rare but particularly insidious consequences of traffic accidents. Their clinical course can be unpredictable, with potential long-term complications arising long after the acute phase has been treated, falling outside the classic framework of acute pancreatitis. The aim of this study is to illustrate the complexity and dynamics of the several-year clinical course of post-traumatic pancreatic injury in a young man, with particular consideration of the role of possible interruption of the Wirsung duct and the underlying anatomical conditions. A 21-year-old man developed acute pancreatitis complicated by recurrent formation of peripancreatic fluid collections following abdominal trauma. Despite early intervention and intensive treatment, the disease became chronic, with periods of apparent stabilization and sudden exacerbations. During subsequent hospital stays, staged endoscopic procedures were performed, including drainage of the reservoirs and temporary pancreatic duct stenting. Radiological imaging suggested disconnected the Wirsung duct, and the clinical course of the disease was further complicated by suspected pancreas divisum. The lack of clear confirmation of this anomaly significantly hindered the permanent control of the patient's clinical condition. This case report highlights the fact that traumatic damage to the pancreas can contribute to a long-term destructive and recurrent disease process. Staged treatment using the latest endoscopic techniques can help protect the patient from extensive surgery, although it does not eliminate the need for long-term and careful observation. Effective management requires the involvement of an experienced team, individualized therapy, and treatment in specialized centres.

Streszczenie

Urazy trzustki są rzadkim, jednak szczególnie podstępny następstwem urazów jamy brzusznej. Ich przebieg bywa nieprzewidywalny, a odległe powikłania mogą ujawnić się długo po zakończeniu leczenia ostrej fazy, wykraczając poza klasyczne ramy ostrego zapalenia trzustki. Celem pracy jest przedstawienie złożoności i dynamiki kilkuletniego przebiegu pourazowego uszkodzenia trzustki u młodego mężczyzny, z uwzględnieniem roli możliwego przerwania przewodu Wirsunga oraz uwarunkowań anatomicznych. U 21-letniego mężczyzny po urazie jamy brzusznej doszło do rozwoju ostrego zapalenia trzustki powikłanego nawracającym tworzeniem się zbiorników okołotrzustkowych. Mimo wczesnej interwencji i intensywnego leczenia choroba przyjęła postać przewlekłą, z okresami pozornej stabilizacji oraz gwałtownych zaostrzeń. W czasie kolejnych hospitalizacji wykonywano etapowe zabiegi endoskopowe, obejmujące drenaż przezścienny oraz czasowe protezowanie przewodu trzustkowego. Obraz radiologiczny sugerował przerwanie ciągłości przewodu Wirsunga, a przebieg choroby dodatkowo komplikowało podejrzenie występowania trzustki dwudzielnej. Brak jednoznacznego potwierdzenia tej anomalii istotnie utrudniał trwałe opanowanie stanu klinicznego pacjenta. Przypadek ten pokazuje, że pourazowe uszkodzenie trzustki może prowadzić do rozwoju wieloletniego procesu chorobowego o destrukcyjnym i nawrotowym charakterze. Leczenie etapowe z zastosowaniem najnowszych technik endoskopowych pozwala uchronić chorego przed rozległymi zabiegami operacyjnymi, jednak nie eliminuje konieczności długotrwałej i czujnej obserwacji. Skuteczne postępowanie wymaga udziału doświadczanego zespołu, indywidualizacji terapii oraz leczenia w wyspecjalizowanych ośrodkach.

Keywords: acute pancreatitis; walled-off pancreatic necrosis; pancreatic trauma; Wirsung duct; pancreas divisum

Słowa kluczowe: ostre zapalenie trzustki; zbiornik otorbionej martwicy; uraz trzustki; przewód Wirsunga; trzustka dwudzielna

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Introduction

Road traffic accidents and the resulting injuries represent a major global public health burden and are among the leading causes of hospital stays in the working-age population. Most abdominal injuries involve the liver or spleen, whereas pancreatic injuries are exceedingly rare. Epidemiological data indicate that pancreatic injuries occur in 0.2%–1.1% of all trauma patients, depending on the source [1].

The most common complications include acute pancreatitis, pseudocysts, pancreatic cysts, and pancreatic abscesses. These complications may not manifest immediately after the injury but can develop several weeks later. Such cases often require multi-stage, specialised treatment.

Case report

We present a case of a 21-year-old man with no significant medical history, who was initially hospitalised at another centre following abdominal trauma sustained in a road traffic accident in mid-2023.

Given the clinical presentation, mechanism of injury, and diagnostic findings, the patient underwent exploratory laparotomy with drainage of the peripancreatic space. A computed tomography (CT) scan of the abdomen performed on 26 October 2023 found an evolving collection within the oedematous pancreatic head, measuring $23 \times 25 \times 36$ mm, located within an area of necrosis. Infiltrative lesions were also identified in the paraduodenal groove, around the duodenal loop, and in the retroperitoneum surrounding the visceral vessels. Magnetic resonance imaging (MRI) performed the following day showed an enlarged collection measuring $30 \times 35 \times 69$ mm and an additional collection measuring $48 \times 35 \times 69$ mm located superior to the pancreatic head in the hepatic hilum. The collection contained several solid components.

A subsequent abdominal CT scan (31 October 2023) demonstrated further enlargement of thin-walled collections: up to $70 \times 43 \times 80$ mm in the hepatic hilum and $56 \times 54 \times 67$ mm in the pancreatic head.

On 6 November 2023, the patient was urgently admitted to the Department of Gastrointestinal Surgery at the University Clinical Center in Katowice due to acute pancreatitis. Physical examination found significant upper abdominal pain and tenderness, without peritoneal signs. Biochemistry showed elevated pancreatic enzymes: alpha-amylase 669 U/L and lipase 1956 U/L. A CT scan performed on 7 November 2023 showed fur-

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ther progression in the size of collections. The collection in the hepatic hilum measured $85 \times 70 \times 94$ mm and exhibited homogeneous contents, consistent with a pseudocyst. The collection in the pancreatic head measured $68 \times 60 \times 70$ mm, displayed heterogeneous contents, and was consistent with an encapsulated necrotic collection complicated by haemorrhage. The Wirsung duct was dilated proximally to 6 mm by the dense collection and extended toward it, while its distal course could not be seen, raising a suspicion of disconnected duct syndrome (DDS).

On 13 November 2023, cystogastrostomy was performed, with a double-pigtail plastic stent inserted into each collection. Turbid, brown fluid (30 mL) was aspirated from the larger collection for microbiological and biochemical analysis. Aspirate analysis found amylase 14,316 U/L, glucose 46.7 mg/dL, CA 19.9 697 U/mL, CEA 2.67 ng/mL, and negative aerobic and anaerobic cultures.

On 21 November 2023, endoscopic retrograde cholangiopancreatography (ERCP) was performed. Fluoroscopy demonstrated two plastic stents placed during the previously described procedure. Following catheterisation of the ampulla of Vater, access to the pancreatic ducts could not be achieved, even despite the use of cannulotomy. A large minor papilla was identified adjacent to the major papilla and was catheterised; the pancreatic ducts were contrasted. A distal ductal segment, approximately 2.5 cm in length and 3 mm in diameter, was visualised. At this level, contrast extravasation was observed, without a clearly defined site of injury, filling a triangular space containing the tip of the double-pigtail stent inserted during cystogastrostomy. The distal course of the pancreatic duct was visible, with a diameter of up to 5.5 mm within the pancreatic body, but its trajectory toward the major papilla was not delineated. The appearance was consistent with a dorsal duct in a bifid pancreas. The procedure was completed by placing a single-pigtail stent in the pancreatic duct, and thereby achieving effective drainage.

During hospital stay, the patient received antibiotic therapy, intravenous fluid therapy, and parenteral nutrition. Abdominal ultrasonography (US) performed on 27 November 2023 demonstrated reduction in the size of one collection with effective drainage, whereas the second collection was could not be seen due to overlying intestinal gas. Laboratory workup showed a marked decrease in alpha-amylase, lipase, and inflammatory markers, leading to the decision to discharge the patient.

During a follow-up visit at the hospital clinic, an abdominal CT scan was ordered and performed on 10 January

2024, showing complete resolution of the collection in the hepatic hilum and near-complete resolution of the collection in the pancreatic head.

In April 2024, the patient was readmitted to the surgical ward for removal of the pancreatic duct stent. On 10 April 2024, ERCP was performed, during which one of the stents placed during the cystogastrostomy and the pancreatic stent were removed. Unfortunately, contrast extravasation persisted following stent removal; consequently, a straight stent was placed in the pancreatic duct, with its proximal end positioned at the junction of the pancreatic body and tail. A CT scan performed on 11 April 2024 showed further reduction of the post-inflammatory collections, including one that had completely collapsed and another with a maximum dimension of up to 18 mm. Inflammatory parameters were unremarkable, and the patient's good general condition along with absence of pain permitted discharge.

In June 2024, the patient returned to the surgical clinic for a follow-up visit, during which a referral was issued to the Department of Gastroenterology for pancreatic duct stent removal or replacement. He was admitted on 17 October 2024, and ERCP was performed the following day. During the procedure, the remaining cystogastrostomy stent and the pancreatic duct stent were removed. Following contrast administration into the pancreatic ducts, no extravasation was observed. As recommended by the endoscopist, an abdominal CT scan was taken, revealing further reduction of the collection in the pancreatic head and complete resolution of the second collection. Reduction of lymph nodes and peripancreatic reactive changes was also noted. The patient was discharged home in good condition.

At that time, the patient's condition appeared to have stabilised; however, on 26 August 2025, he presented to the Emergency Department with severe, stabbing right upper quadrant pain, rated 8/10 on the numeric rating scale (NRS), radiating to the back, persisting for one week and progressively worsening. Laboratory workup on admission showed alpha-amylase 128 U/L, lipase 553 U/L, and total bilirubin 1.57 mg/dL. A CT scan performed on admission revealed a $26 \times 26 \times 27$ mm collection in the pancreatic head, as well as a new adjacent collection measuring approximately 5.5 mm in diameter. To further assess pancreatic ductal dilatation, magnetic resonance cholangiography (MRC) was performed and showed dilatation of the Wirsung duct at the level of the pancreatic body and tail (up to 4 mm). However, it had a filiform course from the level of the cyst to the orifice, making visualization of the orifice impossible. The presence of an additional duct draining into the minor papilla could not be excluded.

During hospital stay, the patient was managed with a nil-per-os diet, parenteral fluid therapy, analgesia, and anticoagulant prophylaxis. An endoscopic consultation was obtained, but endoscopic treatment was not recommended. Owing to improvement in his clinical condition and normalization of laboratory parameters, the patient was discharged home with appropriate recommendations.

The patient's condition again deteriorated in October 2025, when he was transferred from another facil-

ity to the Department of Gastrointestinal Surgery at the University Clinical Center in Katowice due to enlargement of the aforementioned collection to 5 cm and markedly elevated inflammatory markers (CRP 427 mg/L). On 3 October 2025, a repeat cystogastrostomy was performed. Following insertion of an echoendoscope, a thick-walled collection measuring at least 60×50 mm was visualized. The collection was punctured through the duodenal wall, followed by insertion of a plastic double-pigtail stent (7F in diameter and 8 cm in length).

Broad-spectrum antibiotic therapy was administered over the subsequent days, allowing for gradual improvement in his general condition and reduced inflammatory parameters, with CRP decreasing to 55 mg/L. Despite suboptimal imaging conditions, ultrasound (US) demonstrated a reduced size of the pancreatic head collection to 22×19 mm. On 9 October 2025, the patient was discharged home in good general condition.

Following another visit to the surgical clinic, a follow-up abdominal CT scan was performed on 13 November 2025, confirming further reduction of the pancreatic head collection to $16 \times 16 \times 24$ mm. Proximal to the collection, the pancreatic duct was irregularly dilated, measuring up to 4 mm at the level of the pancreatic tail. From the level of collection, the duct remained non-visualized, precluding exclusion of communication between the duct and the described collection.

On 9 December 2025, the patient was admitted for removal of the double-pigtail cystoduodenostomy stent, which was successfully performed on 10 December 2025, with no complications. Our case report concludes with the patient being discharged in good general condition and pain-free, with a recommendation for follow-up at the surgical clinic in February 2026.

Discussion

The history of the presented case indicates that early diagnosis of pancreatic injury and prompt initiation of treatment do not necessarily prevent long-term, recurrent complications, whose clinical course may extend well beyond the framework of classical acute pancreatitis. Of particular importance is the multi-year disease course, characterized by periods of apparent stability followed by recurrent exacerbations requiring hospital stay and endoscopic intervention. This pattern is consistent with literature data indicating that post-traumatic acute pancreatitis, although rare, is more likely to follow a chronic and recurrent course, particularly when associated with Wirsung duct injury, compared to alcoholic or biliary pancreatitis [2, 3].

Notably, the appearance of the pancreatic duct in serial imaging and endoscopic follow-up suggested disruption or an abnormal course, potentially related to the anatomical variant of pancreas divisum, the most common developmental anomaly of the pancreas, affecting up to 15% of the population. It results from failure of fusion of the pancreatic buds during foetal development, leading to drainage of most of the glandular tissue via the dorsal duct into the minor papilla, while the ventral duct

drains the head and uncinate process through the major papilla. Coexisting pancreatic duct injury and anatomical anomalies can substantially complicate both diagnosis and treatment. The coexistence of these factors may promote persistent pancreatic juice leakage and recurrent formation of peripancreatic collection [4].

During the diagnostic process, disconnected duct syndrome (DDS), a known complication of severe necrotizing pancreatitis and pancreatic injury, was also considered. Disruption of the main pancreatic duct results in functional separation of the secretory pancreatic parenchyma and persistent impairment of pancreatic juice outflow. This condition leads to recurrent peripancreatic collections, fistula formation, and subsequent inflammatory episodes. This pattern is reflected in the clinical course of our patient, in whom, despite periodic improvement following conservative and endoscopic treatment, recurrent collections were observed, consistent with the typical presentation of DDS [5, 6].

The use of endoscopic transmural drainage of the collections and pancreatic duct stenting were key elements of the treatment, allowing to avoid extensive surgery and aligning with current trends in minimally invasive management, particularly given the patient's young age. Contemporary studies have shown that this step-up approach, when implemented in specialized centres, is associated with better long-term outcomes than conventional surgical treatment [7, 8].

This case underscores the need for long-term follow-up of patients with pancreatic injuries, even after radiological regression of lesions. Recurrent inflammatory episodes occurring months or even years later should prompt more thorough diagnostic evaluation and reassessment of the therapeutic strategy, considering not only functional but also, as in the present case, anatomical factors.

Conclusions

The aim of this study was to present the complexity of the diagnostic and therapeutic process in cases of post-traumatic pancreatic injury. Despite multi-stage treatment following current guidelines, the young patient developed a long-term, recurrent disease. This case demonstrates that the sequelae of pancreatic injury may be significantly delayed and include complications extending beyond typical acute pancreatitis.

The suspicion of disconnected pancreatic duct syndrome and the coexistence of pancreas divisum were of particular importance in this case. The inability to definitively confirm these abnormalities substantially complicated both imaging assessment and the selection of an optimal therapeutic strategy. The use of endoscopic techniques allowed to avoid extensive surgical procedures and resulted in satisfactory clinical outcomes. These findings underscore the need for long-term follow-up of patients with pancreatic injuries and individualized treatment in specialized centres with appropriate diagnostic and therapeutic resources.

References

1. Dave S, Toy FK, London S. Pancreatic trauma. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023.
2. Bradley EL 3rd, Young PR Jr, Chang MC, et al. Diagnosis and initial management of blunt pancreatic trauma: guidelines from a multiinstitutional review. *Ann Surg*, 1998; 227(6): 861–869. doi: 10.1097/0000658-199806000-00009
3. Debi U, Kaur R, Prasad KK, et al. Pancreatic trauma: a concise review. *World J Gastroenterol*, 2013; 19(47): 9003–9011. doi: 10.3748/wjg.v19.i47.9003
4. Kushnir VM, Wani SB, Fowler K, et al. Sensitivity of endoscopic ultrasound, multidetector computed tomography, and magnetic resonance cholangiopancreatography in the diagnosis of pancreas divisum: a tertiary center experience. *Pancreas*, 2013; 42(3): 436–441. doi: 10.1097/MPA.0b013e31826c711a
5. Verma S, Rana SS. Disconnected pancreatic duct syndrome: updated review on clinical implications and management. *Pancreatology*, 2020; 20(6): 1035–1044. doi: 10.1016/j.pan.2020.07.402
6. Satyam S, Singh S, Sah PK. Disconnected pancreatic duct syndrome: a case series. *Euroasian J Hepatogastroenterol*, 2022; 12(1): 60–63. doi: 10.5005/jp-journals-10018-1357
7. van Santvoort HC, Besselink MG, Bakker OJ, et al.; Dutch Pancreatitis Study Group. A step-up approach or open necrosectomy for necrotizing pancreatitis. *N Engl J Med*, 2010; 362(16): 1491–1502. doi: 10.1056/NEJMoa0908821
8. Bang JY, Arnoletti JP, Holt BA, et al. An endoscopic transluminal approach, compared with minimally invasive surgery, reduces complications and costs for patients with necrotizing pancreatitis. *Gastroenterology*, 2019; 156(4): 1027–1040.e3. doi: 10.1053/j.gastro.2018.11.031