

## OPIS PRZYPADKU / CASE REPORT

Otrzymano/Submitted: 29.02.2025 • Zaakceptowano/Accepted: 10.03.2025

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***Suicide attempt by self-inflicted stab wound of the chest – case report*****Patryk Wruck<sup>1</sup>, Jakub Rzepka<sup>1</sup>, Olga Wiśniewska<sup>1</sup>, Julia Furtak<sup>1</sup>, Dominika Gargula<sup>1</sup>, Kinga Karbowski<sup>1</sup>, Agnieszka Gaczkowska<sup>2</sup>, Małgorzata Grześkowiak<sup>2</sup>**<sup>1</sup> Student scientific society, Poznań University of Medical Science<sup>2</sup> Department of Teaching Anaesthesiology and Intensive Therapy, Poznań University of Medical Sciences**Abstract**

Knife-related injuries have become a growing public health concern in Europe, particularly following the COVID-19 pandemic. The widespread accessibility of sharp objects, including knives, has heightened the risk of such injuries, especially in cases involving intentional self-harm. This is the case of a 37-year-old caucasian male who maintained remarkable hemodynamic stability despite an approximately 15 cm stab wound to the chest. A 37-year-old caucasian male presented to the Emergency Department with a self-inflicted chest stab wound after a suicide attempt. His medical history included a history of alcohol misuse and chronic depressive symptoms. On admission, the patient was alert and oriented (GCS 15), with mild sinus tachycardia and otherwise stable vital signs. Initial management included fluid resuscitation and pain control. A point-of-care ultrasound (eFAST) revealed free fluid in the Morison's pouch. A subsequent CT scan showed a knife penetrating the abdominal cavity beneath the xiphoid process, with probable liver capsule injury and subhepatic bleeding. The patient underwent an urgent laparotomy to control the hemorrhage and repair the liver. Postoperative imaging showed persistent fluid accumulation and decreased lung aeration. Following psychiatric evaluation, quetiapine therapy was initiated for mood stabilization. This case underscores the importance of a multidisciplinary approach in treating patients with self-inflicted injuries, emphasizing the integration of both physical and mental health interventions to optimize outcomes. *Anestezjologia i Ratownictwo 2025; 19: 12-16. doi:10.53139/AIR.20251905*

*Keywords: case report, chest trauma, suicide attempt, thoracic stab wound, self-inflicted injuries*

**Background**

Knife-related incidents continue to pose a major challenge, particularly in Northern and Western Europe. The number of cases has surged following the easing of COVID-19 restrictions. The widespread availability of knives for everyday use also increases the risk, especially in suicide attempts. The increasing prevalence of knife-related incidents, particularly in Europe post-COVID-19, necessitates a comprehensive understanding of both the physical and psychological ramifications of such injuries.

This case report presents a unique scenario involving a 37-year-old caucasian male who, despite suffering an approximately 15 cm stab wound to the chest (figure 1), exhibited remarkable hemodynamic stability. This case emphasizes the importance of holistic care that integrates immediate surgical intervention with ongoing psychiatric evaluation, a combination often overlooked in existing literature. By documenting this case, we aim to highlight the critical need for tailored approaches in the management of self-inflicted injuries, particularly those intertwined with psychiatric challenges.

## Case presentation

A 37-year-old male patient was admitted to the Emergency Department by Medical Air Rescue following self-infliction of a thoracic stab wound. Upon chest evaluation, there was a knife within the thoracic cage, inlet in the left mammary region with the blade pointing at the right hypochondrium.

Upon examination, the patient exhibited signs of consciousness with a GCS score of 15. Vital signs included a heart rate of 110 beats per minute, blood pressure 123/82 mmHg and an oxygen saturation level of 92%. The patient displayed a physiological vesicular murmur, and abdominal examination revealed no peritoneal signs. An extended-Focused Assessment with Sonography in Trauma (eFAST) examination was performed which helped to detect accumulation of fluid between the liver and right kidney.

Initial interventions involved fluid resuscitation and analgesia with oxycodone intravenously. A Computed Tomography (CT) Trauma scan revealed a knife penetrating the abdominal cavity beneath the xiphoid process, potentially causing damage to a liver capsule. Notably, there was no evidence of bleeding into the liver tissue, but subhepatic bleeding and blood

accumulation beneath the diaphragm were found. A small amount of fluid in the pelvis was observed, with no further traumatic findings in the thoracic or ventral cavities.

The patient underwent immediate surgical intervention with a laparotomy, which involved suturing of the liver and drainage of the abdominal cavity. Additionally, a CT Trauma scan discovered minor atelectatic changes in the posterior parts of the lungs (figure 2).

On the postoperative day at the Intensive Care Unit (ICU), the patient underwent an abdominal ultrasound. The ultrasound revealed a small quantity of fluid between the loops of the intestines, while there were no pathological findings revealed in the liver and kidneys.

Concurrently, on the same day, the patient underwent a chest X-ray, which indicated an elevated position of the diaphragm dome and diminished aeration of lung tissue in both lungs. The X-ray was inconclusive in ruling out the presence or absence of fluid in the pleural cavities.

On the day of the suicide attempt, the patient engaged in alcohol consumption, he retrospectively reported recurrent suicidal thoughts and a persistently low mood preceding the incident. Patient reported

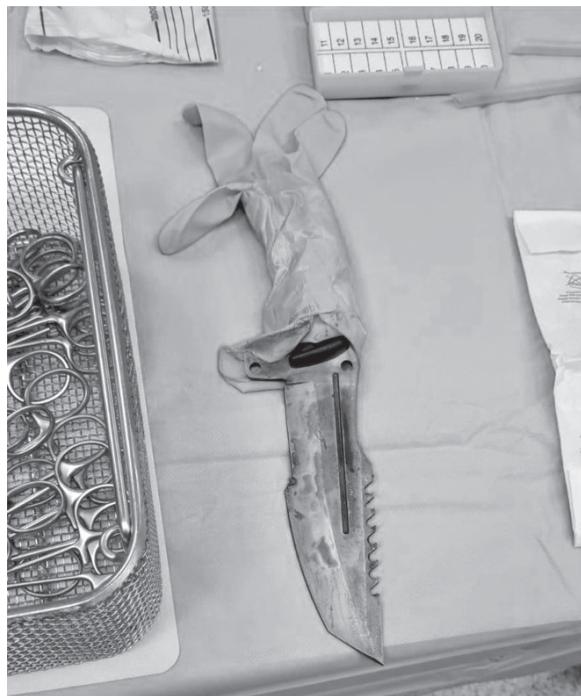


Figure 1. Retrieved knife used in a suicide attempt

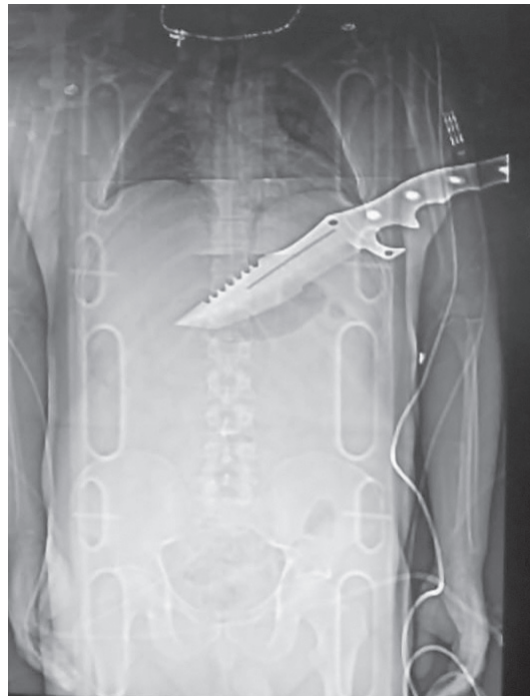


Figure 2. CT scan showing the knife's position

consuming herbal supplements prior to the incident. Psychiatric consultation revealed a depressive mood, normative affect, and normal psychomotor drive. Delusions and hallucinations were negated as well as suicidal thoughts. Quetiapine at a dosage of 3x25 mg was recommended, with consideration for psychiatric inpatient admission contingent upon the patient's somatic stability.

## Discussion and Conclusions

Patients afflicted with penetrating thoracic injuries face elevated mortality risks resulting from damage to vital organs and major vessels. Furthermore, stab wounds located below the nipple line in the lower chest are more likely to result in diaphragmatic and intra-abdominal injuries [1]. Direction of impact plays a major role in differential diagnosis of PCTs (penetrating chest traumas) especially in those cases [2]. Additionally, substantial hemorrhage may occur if an injury to the internal thoracic or intercostal arteries is present, leading to lung evisceration and a mortality rate of 40% [3].

Penetrating chest trauma management can be divided into three stages: prehospital trauma life support, emergency room (ER) trauma life support, and surgical management. The Advanced Trauma Life Support (ATLS) guidelines emphasize that the initial trauma evaluation should identify and address six life-threatening conditions: tension pneumothorax, massive hemothorax, airway obstruction, cardiac tamponade, open pneumothorax, and flail chest. Immediate recognition and intervention for these critical injuries are crucial to stabilize the patient and avert rapid deterioration [4,5].

ER trauma life support should include the repetition of previous examination, but most importantly allows for accurate imaging including traditional radiography, CT and ultrasonography.

Computed tomography is emerging as a primary diagnostic instrument in PCT, owing to its capability to visualize diverse intrathoracic structures and discriminate between substances with different densities. The multidetector CT introduction (MDCT) in clinical application has markedly enhanced the efficiency of data acquisition and image reconstruction, with numerous publications underscoring this transformative shift in imaging methodology [6]. Traditionally, delayed radiographs have constituted the standard

care for stable patients with PCT. The initial chest CT eliminates the necessity for subsequent chest radiography in the context of PCT [7]. Contrast-enhanced CT scan should always be performed when the extent of trauma is difficult to define [8].

With no indications for CT scan, thoracic ultrasound is preferred over chest X-Ray (CXR) for excluding pneumothorax, especially whilst diagnosing small anomalies [9]. Thorax ultrasonography also seems to be a viable option for diagnosing pleural and pericardial effusion, especially when done by an experienced provider [10,11].

The eFAST should be performed in PCTs, mainly in unstable patients [2]. If equipment, providers training and time allows, eFAST should be done in prehospital trauma life support.

After initial assessment and addressing the protocol of airway, breathing, circulation the next step should be addressing the life-threatening injuries. Tube thoracostomy is required in case of large pneumothoraxes and for initial management of hemothorax. Adequate drainage in hemothorax is essential to prevent retained hemothorax which can result in empyema, requiring surgery [2].

Although most chest trauma cases do not require surgical treatment, there are several indications for involving a thoracic surgery team. According to ATLS guidelines, surgical intervention should be considered when there is significant blood loss, such as an initial drainage of more than 1.500 mL through a chest tube or ongoing blood loss surpassing 200 mL per hour sustained for 2-4 hours. Other indicators include hemoptysis, extensive subcutaneous emphysema, large air leaks from the chest tube, or unclear findings on imaging, such as chest X-rays or CT scans. Penetrating chest injuries also mandate the involvement of a thoracic surgeon [1]. Severe endobronchial bleeding, lung contusions that compromise ventilation, or injuries to the tracheobronchial tree, causing air leaks or hemothorax, also necessitate immediate action. Additionally, trauma to the heart or large blood vessels resulting in bleeding or pericardial tamponade requires prompt surgical treatment [1].

In situations where cardiac arrest is imminent, a resuscitative thoracotomy should be considered in the emergency department [2]. According to the Western Trauma Association Critical Decisions in Trauma resuscitative thoracotomy is successful in 35% of patients in shock with penetrating cardiac wounds and 15% of patients with all PCTs [12].

In managing patients with PCT, close observation is essential. Asymptomatic patients with unremarkable imaging should be monitored for delayed pneumothorax or hemothorax onset [13]. Pain control plays a critical role in reducing mortality, as evidenced by a meta-analysis by Ceri E Battle and colleagues; short-acting opioids administered via IV push are generally recommended for effective acute pain management [14,15]. Prophylactic antibiotics should be reserved for cases where the wound is heavily contaminated or if sterile technique was interrupted during thoracostomy tube placement [16]. Additionally, ensuring PCT patients have an up-to-date tetanus vaccination is fundamental for infection prevention [2].

This case highlights the importance of a multidisciplinary approach in managing self-inflicted chest trauma. Despite the primary chest injury, abdominal examination revealed subhepatic bleeding, underscoring the need for abdominal evaluation in chest trauma cases due to possible diaphragmatic or abdominal involvement.

Prompt interventions with fluid resuscitation, extensive imaging, and surgery were essential to stabilize the patient and manage complications, supported by systematic postoperative monitoring. Integrating

psychiatric care further addressed underlying mental health needs, critical in cases of self-harm.

Overall, this case emphasizes a guideline-based approach combining thorough physical and psychiatric care to optimize outcomes in self-inflicted trauma.

### Acknowledgements

This case study was previously presented as an abstract at the International Congress of Young Medical Scientists (ICYMS) 2024.

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Conflict of interest

None

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