

## Pancreatic Trauma: A Case Report

Sara El Ansari<sup>1\*</sup>, S. Taddart<sup>1</sup>, Y. Bouktib<sup>1</sup>, B. Boutakioute<sup>1</sup>, M. Ouali Idrissi<sup>1</sup>, N. Cherif Idrissi El Ganouni<sup>1</sup>, M. A. El Mansouri<sup>2</sup>, K. Rabbani<sup>2</sup>, A. Louzi<sup>2</sup>

<sup>1</sup>Department of Radiology, Arrazi, Mohammed VI University Hospital Center, Marrakesh, Morocco

<sup>2</sup>Department of General Surgery, Arrazi, Mohammed VI University Hospital Center, Marrakech, Morocco

DOI: <https://doi.org/10.36347/sasjm.2024.v10i10.015>

| Received: 25.08.2024 | Accepted: 03.10.2024 | Published: 07.10.2024

\*Corresponding author: Sara El Ansari

Department of Radiology, Arrazi, Mohammed VI University Hospital Center, Marrakesh, Morocco

### Abstract

### Case Report

Pancreatic trauma has high morbidity and mortality rates, especially when other organs are injured. Delayed treatment significantly reduces survival, and duct injuries can lead to severe complications if undiagnosed. The American Association for the Surgery of Trauma introduced a Pancreas Injury Scale to improve management. A 49-year-old woman with multiple trauma from a road accident showed signs of pancreatic injury, including elevated lipase and peripancreatic fluid. A CT scan revealed pancreatic and liver injuries. The case highlights the difficulty of diagnosing pancreatic trauma, particularly in non-violent cases, and the importance of using CT scans for evaluation.

**Keywords:** Pancreatic trauma, High mortality, Delayed treatment, Pancreas Injury Scale, CT scan.

Copyright © 2024 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## INTRODUCTION

Pancreatic trauma carries a significant risk, with morbidity and mortality rates nearing 45% [1-3]. Most patients with pancreatic injuries also experience trauma to other organs, further elevating mortality rates [4-8]. For instance, Asensio *et al.*, found that patients with pancreatic injuries had an average injury severity score (ISS) of  $27 \pm 8$  [8].

The continuity of the main pancreatic duct is crucial for determining patient outcomes following pancreatic injury. If ductal disruptions go undiagnosed, they can lead to complications such as fistulas, fluid collections, secondary infections, and extended hospital or intensive care unit stays. Delayed treatment can result in nearly 60% of patients not surviving their injuries [1-9].

To improve the diagnosis and management of pancreatic injuries, the American Association for the Surgery of Trauma (AAST) introduced a Pancreas Organ Injury Scale in 1990.

## OBSERVATION

"We report the case of a 49-year-old unemployed female patient who was admitted to the emergency room for the management of a polytrauma due to a road traffic accident, with craniofacial, thoracic, and abdominal impact points dating back more than 48

hours. The abdomen was tender, and lipase levels were five times higher than normal. An abdominal ultrasound was performed, which revealed a moderate amount of peritoneal effusion. Subsequently, an abdominal CT scan showed a body and tail pancreatic enlargement, a peripancreatic fluid collection and an isthmic fracture passing through the Wirsung duct, along with a hepatic laceration and a large abdominal effusion. The management consisted of clinical monitoring with good progression. The rarity of isolated pancreatic trauma and its atypical clinical symptoms at the early stage makes diagnosis relatively difficult, especially since the laboratory findings are not specific. This should encourage us to perform CT scans in cases of any epigastric trauma, even if it is not violent."

## DISCUSSION

### Ultrasound

While ultrasound (US) is easy to use, portable, and cost-effective, diagnosing pancreatic injuries remains challenging, even with technically adequate sonograms [10], that are reliable for tracking complications like pseudocysts. Real-time contrast-enhanced US is valuable for emergency imaging, but it should not be seen as a substitute for CT [11].

Ultrasound can reveal localized traumatic enlargement of the pancreas or diffuse edema, which can resemble inflammatory pancreatitis. In trauma patients,

the presence of peripancreatic fluid may indicate pancreatic contusion which was seen in our case.

A traumatic pancreatic pseudocyst can also be detected and monitored through serial ultrasound examinations. Since the most common trauma-related complications involve rupture or stenosis of the main pancreatic duct, it is crucial to attempt visualization of this structure in all cases of pancreatic injury. Additionally, a transaction across the pancreatic parenchyma may suggest ductal damage [12].

#### CT:

CT is the most straightforward and minimally invasive diagnostic method available for assessing suspected pancreatic trauma and its complications, largely due to the subtlety of ultrasound findings.

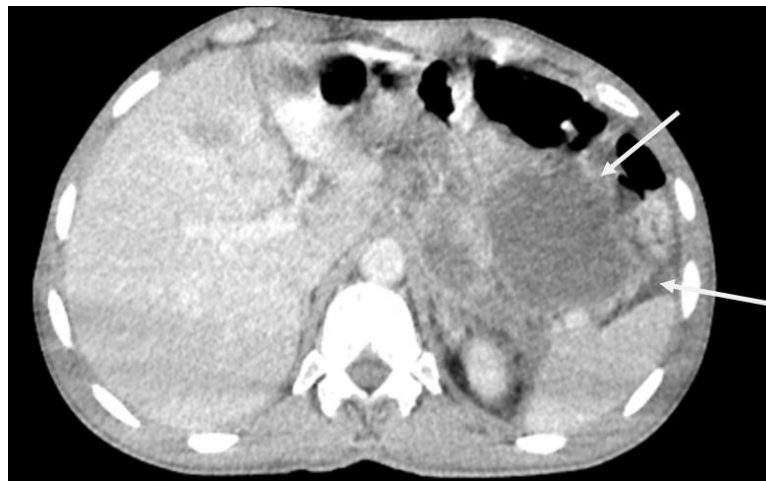
However, it is seldom useful in cases of acute penetrating injury. For hemodynamically stable patients with abdominal trauma, computed tomography is the

preferred imaging technique, offering the safest and most thorough approach to diagnosing traumatic pancreatic injury [13].

Direct signs of pancreatic injury include laceration, transection, focal pancreatic enlargement and inhomogeneous enhancement. Fluid collections are usually seen communicating with the pancreas at the site of laceration or transection. Secondary signs include peripancreatic fat stranding, peripancreatic fluid collections, fluid between the splenic vein and pancreas, hemorrhage, thickening of the left anterior pararenal fascia and associated injuries to adjacent structures [13].

Pancreatic fracture on CT is diagnosed if there is a clear separation of fragments across the long axis of the pancreas [14].

In our case, direct signs and some indirect signs were noticed.



**Figure 1:** Axial contrast-enhanced computed tomography shows a heterogeneous peripancreatic fluid collection appearance of the body and tail. There is also fluid in the lesser sac and perisplenic space.



**Figure 2:** Axial contrast-enhanced computed tomography shows body and tail pancreatic enlargement



**Figure 3: Axial contrast-enhanced computed tomography demonstrating a pancreatic fracture (white arrow) in body region**

#### Ultrasound (US):

US is portable and cost-effective but has limitations in diagnosing pancreatic trauma. It is useful for detecting fluid collections and pseudocysts but not as reliable as CT.

#### Computed Tomography (CT):

CT is the preferred imaging method for diagnosing pancreatic trauma, identifying both direct and indirect signs. Pancreatic fractures and lacerations are best visualized with CT.

The article stresses the importance of CT and modern imaging techniques in diagnosing pancreatic injuries early to improve patient outcomes.

Pancreatic injuries are rare and challenging to diagnose. CT is the preferred method for assessing these injuries, though it may miss duct injuries unless there is a full laceration. Minor injuries can be treated conservatively, while major trauma usually requires surgery. Advances in imaging and ERCP allow for non-surgical management in some cases.

#### CONCLUSION

Pancreatic injuries are rare and often challenging to diagnose. Due to the subtlety of ultrasound findings, computed tomography (CT) is the preferred method for assessing suspected pancreatic trauma. However, injuries to the pancreatic duct may go undetected on CT unless there is a complete laceration. In some cases, minor duct injuries can be managed non-surgically, but major pancreatic injuries typically require urgent surgical intervention. With advancements in modern imaging techniques and expertise in endoscopic retrograde cholangiopancreatography (ERCP), isolated pancreatic injuries may be treated conservatively in select situations.

#### REFERENCES

1. Wind, P., Tiret, E., Cunningham, C., Frileux, P., Cugnenc, P. H., & Parc, R. (1999). Contribution of endoscopic retrograde pancreatography in management of complications following distal pancreatic trauma. *The American Surgeon*, 65(8), 777-783.
2. Lin, B. C., Chen, R. J., Fang, J. F., Hsu, Y. P., Kao, Y. C., & Kao, J. L. (2004). Management of blunt major pancreatic injury. *Journal of Trauma and Acute Care Surgery*, 56(4), 774-778.
3. Wolf, A., Bernhardt, J., Patrzyk, M., & Heidecke, C. D. (2005). The value of endoscopic diagnosis and the treatment of pancreas injuries following blunt abdominal trauma. *Surgical Endoscopy And Other Interventional Techniques*, 19, 665-669.
4. Cushman, J. G., Feliciano, D. V., & Renz, B. M. (1995). Contemporary management of pancreatic trauma. *Advances in trauma and critical care*, 10, 309-336.
5. Buccimazza, I., Thomson, S. R., Anderson, F., Naidoo, N. M., & Clarke, D. L. (2006). Isolated main pancreatic duct injuries spectrum and management. *The American journal of surgery*, 191(4), 448-452.
6. Vasquez, J. C., Coimbra, R., Hoyt, D. B., & Fortlage, D. (2001). Management of penetrating pancreatic trauma: an 11-year experience of a level-1 trauma center. *Injury*, 32(10), 753-759.
7. Rickard, M. J. F. X., Brohi, K., & Bautz, P. C. (2005). Pancreatic and duodenal injuries. Keep it simple. *ANZJ Surg*, 75, 581-6.
8. Asensio, J. A., Petrone, P., Roldán, G., Kuncir, E., & Demetriades, D. (2003). Pancreaticoduodenectomy: a rare procedure for the management of complex pancreaticoduodenal injuries. *Journal of the American College of Surgeons*, 197(6), 937-942.
9. Tyburski, J. G., Dente, C. J., Wilson, R. F., Shanti, C., Steffes, C. P., & Carlin, A. (2001). Infectious

- complications following duodenal and/or pancreatic trauma. *The American Surgeon*, 67(3), 227-231.
10. Jeffrey, R. B., Laing, F. C., & Wing, V. W. (1986). Ultrasound in acute pancreatic trauma. *Gastrointestinal radiology*, 11, 44-46.
  11. Catalano, O., Lobianco, R., Sandomenico, F., & Siani, A. (2004). Real-time, contrast-enhanced sonographic imaging in emergency radiology. *La Radiologia Medica*, 108(5-6), 454-469.
  12. Lenhart, D. K., & Balthazar, E. J. (2008). MDCT of acute mild (necrotizing) pancreatitis: abdominal complications and fate of fluid collections. *American Journal of Roentgenology*, 190(3), 643-649.
  13. Gupta, A., Stuhlfaut, J. W., Fleming, K. W., Lucey, B. C., & Soto, J. A. (2004). Blunt trauma of the pancreas and biliary tract: a multimodality imaging approach to diagnosis. *Radiographics*, 24(5), 1381-1395.
  14. Dodds, W. J., Taylor, A. J., Erickson, S. J., & Lawson, T. L. (1990). Traumatic fracture of the pancreas: CT characteristics. *Journal of computer assisted tomography*, 14(3), 375-378.