

Pancreatic Rupture in Mid-Pregnancy Mimicking Obstetric Emergency

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ABSTRACT

Suspicion for non-obstetric intra-abdominal injuries in pregnant patients is often overlooked due to the striking clinical similarity to more common obstetric causes such as placental abruption or uterine rupture. This report discusses diagnostic pitfalls in a fatal pancreatic rupture case masquerading as a catastrophic obstetric event. This case highlights the "obstetric bias" in acute shock management. The Couvelaire uterus and atonia were secondary consequences of systemic hypoperfusion rather than the primary source of hemorrhage. A 25-year-old woman at 24 weeks gestation presented with profound hemorrhagic shock (BP 42/26 mmHg, GCS 3), a rigid "wooden" uterus, and intrauterine fetal demise. While initial findings suggested concealed placental abruption, laparotomy revealed a Couvelaire, atonic uterus without rupture. Further systematic exploration discovered a high-grade pancreatic tail rupture with a 7,000 mL retroperitoneal hemorrhage. Despite a total hysterectomy and damage-control measures, the patient succumbed to refractory shock and multi-organ dysfunction postoperatively. Clinicians must remain aware of non-obstetric cause of hemodynamic collapse in atypical presentations to prevent diagnostic delay. Prompt adoption of trauma-style algorithms, damage-control surgery, and massive transfusion protocols are vital when surgical findings do not correlate with the degree of hemorrhage.

INTRODUCTION

Traumatic injury to the pancreas is exceptionally rare, reported in approximately 0.2–0.3% of all trauma patients (Kuza et al. 2020). Despite its rarity, it carries substantial morbidity because diagnosis is frequently delayed by subtle clinical signs and the limited sensitivity of early imaging (Debi et al., 2013; Firsova, 2023; Khadjibaev et al., 2021; Krige et al., 2015; Kuza et al., 2020; Pavlidis et al., 2022; Szatmary et al., 2022). In pregnancy, recognizing pancreatic trauma is even more difficult; physiological changes, concerns for fetal safety, and restricted imaging can easily obscure the diagnosis (Abhirami et al., 2021; Alsadery et al., 2023; Augustin et al., 2024; Luong et al., 2025; Sakamoto et al., 2019; Tunn et al., 2025; Yang et al., 2020).

When an obstetric patient presents in shock, clinicians often succumb to a strong "anchoring bias," assuming the source is uterine such as placental abruption or uterine rupture even when the true origin is extra-uterine (Anriani & Rumopa, 2023; Giouleka et al., 2022; Liu et al., 2023; Pr & Begum, 2017; Wolfson et al., 2025; Yu et al., 2025). This bias is particularly hazardous when concurrent fetal demise and a tense uterus reinforce the impression of a primary obstetric catastrophe rather than a surgical emergency (Alsadery et al., 2023; Anriani & Rumopa, 2023; Giouleka et al., 2022; Liu et al., 2023; Pr & Begum, 2017;

Sakamoto et al., 2019; Tunn et al., 2025; Wolfson et al., 2025; Yu et al., 2025). While pancreatic rupture is usually associated with high-energy impacts, traditional practices like abdominal massage (*pijat urut*) in certain cultures can induce occult, life-threatening solid-organ trauma without external markers (Abhirami et al., 2021; Alsadery et al., 2023; Sakamoto et al., 2019; Sun et al., 2022).

This case report fills a critical gap in the literature by documenting a fatal pancreatic rupture in a pregnant patient where the diagnosis was delayed due to obstetric bias. The novelty lies in highlighting how traditional abdominal massage can cause catastrophic pancreatic injury and how the Couvelaire uterus and atonia can mislead clinicians into focusing on obstetric causes while missing the true source of hemorrhage. This report provides a unique contribution by demonstrating the importance of systematic surgical exploration when obstetric findings do not correlate with the degree of shock. Previous research by Sun et al. (2022) described isolated pancreatic injury caused by abdominal massage, but their case was in a non-pregnant patient, making this report the first to document such an injury in pregnancy. The urgency of this report is underscored by the high mortality of pancreatic trauma (up to 20-30% in some series) and the fact that survival depends on rapid recognition and surgical control.

The purpose of this case report is to describe the clinical presentation, diagnostic challenges, and management of a pregnant patient with pancreatic rupture following abdominal massage. The contribution to medical knowledge includes raising awareness of non-obstetric causes of hemorrhagic shock in pregnancy, highlighting the importance of systematic surgical exploration, and emphasizing the role of trauma-style management in atypical presentations. The objective is to provide clinicians with a framework for recognizing and managing similar cases. The benefits include improved diagnostic accuracy, reduced maternal mortality, and better outcomes for pregnant patients presenting with atypical abdominal emergencies.

METHOD

A 25-year-old woman, gravida 2 para 0 abortus 1, at 24 weeks' gestation, with no documented chronic medical conditions, presented with acute collapse. The patient's acute presentation followed a protracted 18-day course of intermittent flank and abdominal pain, for which she sought care at multiple facilities (Table 1). On the day of her final admission, she attended Tugu Hospital at 07:00 with worsening abdominal pain and was discharged with oral analgesics. At 16:00, due to persistent pain, she sought alternative relief through a traditional abdominal massage (*pijat urut*) a common local practice that, in this instance, likely served as the mechanism for blunt visceral trauma. Her condition rapidly deteriorated, with loss of consciousness and shock, leading to transfer to Charlie Hospital at 22:00.

On arrival at Charlie Hospital, she was in profound hemorrhagic shock (BP 42/26 mmHg, HR 140 bpm) with laboratory findings confirming critical anemia (Hb 4.1 g/dL). Initial bedside ultrasonography showed intrauterine fetal demise and suggested a severe placental abruption or concealed uterine rupture (Figure 1). Initial resuscitation with 2,000 mL Ringer's lactate was started, and urgent referral to the tertiary center (Dr. Kariadi Central General Hospital) was arranged.

The patient remained critical when arriving at Dr. Kariadi hospital. Vital signs showed hemodynamic instability, already intubated, and maintained on manual ventilation (Table 1). She had marked abdominal distension with guarding, cold extremities, and anuria. Pupillary light reflexes were sluggish. There was no vaginal bleeding. Given persistent shock and suspected massive intra-abdominal hemorrhage, an emergency “Code Blue” laparotomy was initiated. Under general anesthesia, a midline laparotomy revealed massive hemoperitoneum. Exploration revealed a massive hemoperitoneum and a distended, Couvelaire uterus. Despite the striking myometrial ecchymosis, the uterus was intact, and no adnexal pathology was identified (Figure 2). Ecchymoses were present on portions of the bowel and omentum. Given intractable uterine atony in the context of hemorrhagic shock, a total abdominal hysterectomy with bilateral salpingectomy was performed. A non-macerated female fetus weighing 520 g was delivered via hysterotomy at 02:10 (Apgar 0-0-0).

Despite hysterectomy, active intra-abdominal bleeding persisted. Systematic exploration showed intact liver and spleen. Further dissection into the upper abdomen and lesser sac identified brisk arterial bleeding from the retroperitoneum, and a digestive surgery consultation was obtained intraoperatively. A high-grade rupture of the pancreatic tail was discovered, manifesting as active arterial bleeding within the retroperitoneum (Figure 3). Given the patient’s failing physiology and bleeding that was difficult to control with standard surgical methods, the team transitioned to a damage-control strategy. Hemostasis was attempted through intensive packing of the pancreatic tail rupture and the placement of an abdominal tamponade. Total intraoperative blood loss was estimated at 6,000–7,000 mL. To address this massive hemorrhage and the patient’s profound anemia, an intraoperative resuscitation involving four units of packed red cells and two units of whole blood was administered. Despite these aggressive measures, the patient’s physiological state remained critical as she was transferred to the ICU.

In the Intensive Care Unit post-operative vital signs showed persistent profound hypotension (48/19 mmHg) despite high-dose vasopressor support (norepinephrine at 12 mL/hour); the heart rate was 82 beats per minute and oxygen saturation was 100%. Clinical evidence of multi-organ failure followed, including anuria and coffee-ground gastric drainage. Her physiological reserve was ultimately exhausted by the “lethal triad” of acidosis, hypothermia, and coagulopathy. She was pronounced dead in the ICU.

RESULT AND DISCUSSION

Vigorous traditional abdominal massage likely produced the high-grade pancreatic tail rupture in this case. The resulting massive hemorrhage matches the high-mortality profile of pancreatic trauma, where survival depends on rapid recognition and surgical control (Girard et al., 2016; Krige et al., 2015, 2017; Kuza et al., 2020). The clinical trial of profound shock, a “wooden” abdomen, and fetal demise combined with the intraoperative finding of a Couvelaire, atonic uterus created a perfect diagnostic trap. These findings might lead the clinician to establish a working diagnosis of “refractory atony,” although the uterus was not the primary source of the hemorrhage (Anriani & Rumopa, 2023; Giouleka et al., 2022; Liu et al., 2023; Pr & Begum, 2017; Wolfson et al., 2025).

Normal pregnancy physiology complicates this further. Hypervolemia often masks early shock, meaning a patient can lose a significant volume of blood before classical hypotension

appears (Alsadery et al., 2023; Giouleka et al., 2022; Sakamoto et al., 2019; Tunn et al., 2025). Furthermore, as the uterus grows, it displaces the pancreas and other abdominal organs, which can mask peritonism and explain why early ultrasound can be misleadingly reassuring (Alsadery et al., 2023; Giouleka et al., 2022; Sakamoto et al., 2019; Tunn et al., 2025; Xu & Fa, 2024).

In this case, the Couvelaire uterus and atonia were secondary complications. Contemporary literature suggests that Couvelaire changes are often a marker of systemic underperfusion rather than a primary mechanical failure (Anriani & Rumopa, 2023; Giouleka et al., 2022; Liu et al., 2023; Wolfson et al., 2025). Managing such catastrophic cases requires the early integration of damage-control surgery (DCS) (Girard et al., 2016; Krige et al., 2015, 2017; Kuza et al., 2020; Pr & Begum, 2017). In obstetrics, these strategies including abdomino-pelvic packing are increasingly used for intractable bleeding and spontaneous hemoperitoneum (Giouleka et al., 2022; Kostov et al., 2025; Liu et al., 2023; Pr & Begum, 2017; Salgado et al., 2025; Yu et al., 2025). Success depends on a trauma-style multidisciplinary response and adherence to structured management protocols (Choi & Kim, 2025; Jung et al., 2024; Liu et al., 2023; Yu et al., 2025).

The damage-control surgery and a massive transfusion protocol could not prevent the patient from a refractory shock (Choi & Kim, 2025; Liu et al., 2023; Søreide et al., 2018; Yu et al., 2025). This death highlights how irreversible a condition could be if the primary source of bleeding is not identified immediately. Advanced imaging and early surgical consultation must be considered in atypical cases such as with a history of abdominal massage (Alsadery et al., 2023; Giouleka et al., 2022; Sakamoto et al., 2019; Sun et al., 2022; Tunn et al., 2025).

CONCLUSION

This case demonstrated the "obstetric bias" that can occur when catastrophic maternal collapse is mistakenly attributed solely to pregnancy-related causes like placental abruption or uterine atony. The Couvelaire uterus and atonia observed here were likely secondary consequences of systemic hypoperfusion rather than the primary source of the 7,000 mL hemorrhage. Clinicians must include suspicions for hidden retroperitoneal or non-obstetric injuries whenever the severity of shock is disproportionate to identifiable uterine pathology. Management of such atypical presentations requires prompt trauma responses, including damage-control surgery, massive transfusion protocols, and a multidisciplinary team.

REFERENCE

- Abhirami, G., Sathyavani, C., & Patil, R. (2021). Acute abdomen in pregnancy: A case series on clinical presentation and diagnostic dilemma. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 10, 443–447. <https://doi.org/10.18203/2320-1770.ijrcog20210255>
- Alsadery, H., Bamalan, O., Aljubran, H., Albaish, L., & Ghanim, B. (2023). Non-obstetric acute abdomen in pregnancy: A review of literature. *Medical Archives*, 77, 293–298. <https://doi.org/10.5455/medarh.2023.77.293-298>
- Anriani, S., & Rumopa, H. (2023). P2A0 38-year-old woman postpartum hemorrhage with hemorrhagic shock and severe anemia caused by uterine atony: A case report from Southwest Sumba, East Nusa Tenggara. *European Journal of Medical and Health Sciences*, 5(4), Article 1798. <https://doi.org/10.24018/ejmed.2023.5.4.1798>

- Augustin, G., Lai, Q., & Berković, M. (2024). Primary hyperparathyroidism-induced acute pancreatitis in pregnancy: A systematic review with a diagnostic-treatment algorithm. *World Journal of Gastroenterology*, 30, 3755–3765. <https://doi.org/10.3748/wjg.v30.i26.3755>
- Choi, Y., & Kim, S. (2025). Evolving perspectives on blood transfusion in obstetric hemorrhage: A narrative review. *Korean Journal of Anesthesiology*. Advance online publication. <https://doi.org/10.4097/kja.24612>
- Debi, U., Kaur, R., Prasad, K., Sinha, S., Sinha, A., & Singh, K. (2013). Pancreatic trauma: A concise review. *World Journal of Gastroenterology*, 19(47), 9003–9011. <https://doi.org/10.3748/wjg.v19.i47.9003>
- Firsova, V. (2023). Pancreatic trauma. *Journal of Experimental and Clinical Surgery*, 16(2), 186–193. <https://doi.org/10.18499/2070-478X-2023-16-2-186-193>
- Girard, E., Abba, J., Cristiano, N., Siebert, M., Barbois, S., Letoublon, C., et al. (2016). Management of splenic and pancreatic trauma. *Journal of Visceral Surgery*, 153(4 Suppl.), S45–S60. <https://doi.org/10.1016/j.jviscsurg.2016.03.003>
- Giouleka, S., Tsakiridis, I., Kalogiannidis, I., Mamopoulos, A., Tentas, I., Athanasiadis, A., et al. (2022). Postpartum hemorrhage: A comprehensive review of guidelines. *Obstetrical & Gynecological Survey*, 77, 665–682. <https://doi.org/10.1097/OGX.0000000000001083>
- Jung, Y., Kim, J., Shin, W., Song, S., Choi, J., Hyun, S., et al. (2024). Outcomes and prognosis of postpartum hemorrhage according to management protocol: An 11-year retrospective study from two referral centers. *World Journal of Emergency Surgery*, 19, 23. <https://doi.org/10.1186/s13017-024-00547-5>
- Khadjibaev, F., Atadjanov, S., Rizaev, K., Mustafaev, A., & Askarov, A. (2021). Modern technologies for diagnosis and treatment of pancreatic injuries. *Bulletin of Emergency Medicine*, 14(3), Article a12. <https://doi.org/10.54817/1234.v14.i3.a12>
- Kostov, S., Kornovski, Y., Yordanov, A., Slavchev, S., Ivanova, Y., Alkatout, I., et al. (2025). Damage control surgery in obstetrics and gynecology: Abdomino-pelvic packing in multimodal hemorrhage management. *Journal of Clinical Medicine*, 14, 7207. <https://doi.org/10.3390/jcm14017207>
- Krige, J., Kotze, U., Setshedi, M., Nicol, A., & Navsaria, P. (2015). Prognostic factors, morbidity and mortality in pancreatic trauma: A critical appraisal of 432 consecutive patients treated at a Level 1 trauma centre. *Injury*, 46, 830–836. <https://doi.org/10.1016/j.injury.2015.02.007>
- Krige, J., Kotze, U., Setshedi, M., Nicol, A., & Navsaria, P. (2017). Management of pancreatic injuries during damage control surgery: An observational outcomes analysis of 79 patients treated at an academic Level 1 trauma centre. *European Journal of Trauma and Emergency Surgery*, 43, 411–420. <https://doi.org/10.1007/s00068-016-0708-z>
- Kuza, C., Hirji, S., Hirji, S., Englum, B., Ganapathi, A., Speicher, P., et al. (2020). Pancreatic injuries in abdominal trauma in US adults: Analysis of the National Trauma Data Bank on management, outcomes, and predictors of mortality. *Scandinavian Journal of Surgery*, 109, 193–204. <https://doi.org/10.1177/1457496919830634>
- Liu, L., Nathan, L., Sheen, J., & Goffman, D. (2023). Review of current insights and therapeutic approaches for the treatment of refractory postpartum hemorrhage. *International Journal of Women's Health*, 15, 905–926. <https://doi.org/10.2147/IJWH.S414349>
- Luong, T., Le, L., Nguyen, N. V. D., & Dang, H. (2025). Persistent challenges in the diagnosis

- of acute pancreatitis due to primary hyperparathyroidism during pregnancy. *World Journal of Gastroenterology*, 31. Advance online publication. <https://doi.org/10.3748/wjg.v31.i2.125>
- Pavlidis, E., Psarras, K., Symeonidis, N., Geropoulos, G., & Pavlidis, T. (2022). Indications for the surgical management of pancreatic trauma: An update. *World Journal of Gastrointestinal Surgery*, 14, 538–543. <https://doi.org/10.4240/wjgs.v14.i6.538>
- Pr, R., & Begum, J. (2017). Recent advances in the management of major postpartum haemorrhage: A review. *Journal of Clinical and Diagnostic Research*, 11(2), QE01–QE05. <https://doi.org/10.7860/JCDR/2017/22659.9463>
- Sakamoto, J., Michels, C., Eisfelder, B., & Joshi, N. (2019). Trauma in pregnancy. *Emergency Medicine Clinics of North America*, 37(2), 317–338. <https://doi.org/10.1016/j.emc.2019.01.009>
- Salgado, J., Loria, W., Lemus, A., Loria, G., Pérez, G., Mazariegos, J., et al. (2025). Damage control surgery in obstetrics: Literature review. *Journal of Anesthesia & Critical Care: Open Access*, 17, 612. <https://doi.org/10.15406/jaccoa.2025.17.00612>
- Søreide, K., Weiser, T., & Parks, R. (2018). Clinical update on management of pancreatic trauma. *HPB*, 20(12), 1099–1108. <https://doi.org/10.1016/j.hpb.2018.05.006>
- Sun, B., Zhang, L., Yu, W., & Tuo, H. (2022). Isolated pancreatic injury caused by abdominal massage: A case report. *World Journal of Clinical Cases*, 10, 4535–4540. <https://doi.org/10.12998/wjcc.v10.i14.4535>
- Szatmary, P., Grammatikopoulos, T., Cai, W., Huang, W., Mukherjee, R., Halloran, C., et al. (2022). Acute pancreatitis: Diagnosis and treatment. *Drugs*, 82, 1251–1276. <https://doi.org/10.1007/s40265-022-01766-4>
- Tunn, R., Ramakrishnan, R., Engjom, H., & Knight, M. (2025). Incidence, outcomes and management of spontaneous haemoperitoneum in pregnancy: A UK population-based study. *NIHR Open Research*, 5, 13960. <https://doi.org/10.12688/nihropenres.13960.1>
- Wolfson, C., Angelson, J., Atlas, R., Burd, I., Chin, P., Downey, C., et al. (2025). Severe maternal morbidity contributed by obstetric hemorrhage: Maryland, 2020–2022. *American Journal of Obstetrics & Gynecology MFM*, 101589. <https://doi.org/10.1016/j.ajogmf.2024.101589>
- Xu, R., & Fa, H. (2024). Sudden rupture of a giant solid pseudopapillary tumour of the pancreas during caesarean delivery in a pregnant woman with severe preeclampsia: A case report and literature review. *International Journal of Surgery Case Reports*, 122, 110127. <https://doi.org/10.1016/j.ijscr.2024.110127>
- Yang, L., Liu, N., & Long, Y. (2020). Intra-abdominal hemorrhage during pregnancy: Four case reports. *World Journal of Clinical Cases*, 8, 3074–3081. <https://doi.org/10.12998/wjcc.v8.i14.3074>
- Yu, P., Hung, K., Kang, L., Yang, T., Wu, C., Tsai, P., et al. (2025). A rapid and effective approach to building a life-saving multidisciplinary team for transferred postpartum haemorrhage patients: Leveraging trauma experience: A retrospective study. *BMC Pregnancy and Childbirth*, 25, 7204. <https://doi.org/10.1186/s12884-025-07204-w>