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CASE REPORT

Penetrating Abdominal Trauma in Pregnancy Complicated by Aortic, IVC, and Uterine Injuries: A Rare Case Report

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Abstract

Background: Trauma is the leading non-obstetric cause of maternal mortality and is associated with high fetal morbidity and mortality. Penetrating abdominal trauma during pregnancy is uncommon, but when complicated by major vascular and uterine injuries, it carries extremely poor outcomes. ***Case Presentation:*** A 34-year-old pregnant woman sustained multiple stab wounds to the abdomen and back. On arrival, she was conscious but hemodynamically unstable. E-FAST demonstrated intra-abdominal free fluid, and emergent laparotomy revealed a Zone 1inframesocolic hematoma. Both the infrarenal aorta and inferior vena cava (IVC) were injured. After obtaining supraceliac control, the vascular injuries were repaired with 4-0 Prolene sutures. Two full-thickness uterine perforations were identified, and hysterectomy was performed, resulting in delivery of a non-viable fetus. Postoperative CT showed additional thoracic injuries, including pneumothoraces and pulmonary contusions. The patient required left chest tube insertion but was extubated by postoperative day 2, transferred to the ward by day 4, and discharged home on day 8. At two-week follow-up, she remained clinically stable with a healed surgical wound. ***Conclusion:*** This case demonstrates the complexity of managing penetrating abdominal trauma in pregnancy, particularly when complicated by combined great vessel and uterine injuries. Maternal stabilization must be prioritized, as maternal survival remains the strongest determinant of fetal outcome. Despite poor fetal prognosis, timely diagnosis, aggressive resuscitation, prompt surgical repair, and multidisciplinary collaboration can result in successful maternal survival.

Keywords: Pregnancy; Penetrating abdominal trauma; Aortic injury; Inferior vena cava injury; Uterine injury; Case report; Maternal survival; Fetal outcome.

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1. Introduction:

Trauma in pregnancy is a major contributor to both maternal and fetal morbidity and mortality, representing the leading non-obstetric cause of maternal death worldwide [2]. The reported incidence ranges between 1 in 12 and 1 in 15 pregnancies, with mechanisms including motor vehicle collisions, falls, assaults, and penetrating injuries [2,6]. While most pregnancy-associated trauma cases are blunt, penetrating abdominal injuries remain uncommon and often carry devastating consequences due to the risk of major vascular, visceral, and uterine involvement. Fetal loss occurs in up to one-third of pregnant trauma patients, with placental abruption and maternal hypovolemia being the most frequent causes [2,8]. Importantly, fetal demise may occur even in the absence of direct injury, as the placenta is highly sensitive to maternal hypoperfusion and catecholamine-mediated vasoconstriction [6]. Maternal physiological adaptations during pregnancy, such as increased blood volume, may mask early signs of shock, making diagnosis and timely intervention more challenging [7]. Vascular injuries involving the abdominal aorta and inferior vena cava (IVC) are among the most lethal traumatic lesions, with mortality rates frequently exceeding 70% [1]. Their occurrence in pregnant women is exceedingly rare and is associated with high maternal and fetal fatality. When combined with uterine injury, the complexity of management is further magnified.

We present a rare case of penetrating abdominal trauma in a pregnant woman with simultaneous infrarenal aortic, IVC, and uterine injuries. Despite the severity of these injuries and the inevitable fetal loss, maternal survival was achieved through rapid diagnosis, aggressive resuscitation, timely operative intervention, and multidisciplinary collaboration.

Objectives:

- To emphasize the importance of prioritizing maternal hemodynamic stabilization in cases of trauma during pregnancy.
- To raise awareness of the need for high clinical suspicion of major thoracic vascular injury in penetrating chest trauma.
- To highlight the critical role of early multidisciplinary team involvement in managing traumatic injuries in pregnant patients.
- To demonstrate strategies aimed at optimizing both maternal and fetal outcomes in complex trauma cases.

Method:

This case report follows PRISMA guidelines, the case was conducted at king Fahad Hospital in Medina, informed consent was taken from the patient. The concept, acquisition, analysis, interpretation of data and critical review of the manuscript were done by all authors.

2. Case Presentation:

A 34-year-old pregnant woman was transported by the Red Crescent after sustaining multiple stab wounds to the abdomen and back. On arrival, she was fully conscious with a Glasgow Coma Scale (GCS) score of 15/15. Her airway was patent, and she was in obvious distress from pain. She was breathing spontaneously with an oxygen saturation of 96% on room air, for which supplemental oxygen was administered. Hemodynamically, she was tachycardic (HR 130) and hypotensive (BP 95/50, MAP 60). Peripheral pulses were palpable, and one intravenous (IV) line had been established in the prehospital setting with 500 mL of normal saline infused. A unit of uncross-matched packed red blood cells (PRBC) was initiated, and a second IV line was secured. Focused Assessment with Sonography in Trauma (E-FAST) revealed free fluid in the right upper quadrant. Examination demonstrated three stab wounds to the anterior abdomen (one in the epigastrium and two in the right upper quadrant, one of which was associated with omental evisceration). Three additional stab wounds were identified on the back: one over the right scapula, one in the left paraspinal interscapular area, and one in the left suprascapular region. A laceration was also noted on the distal palmar surface of the left fifth finger. Chest radiography showed no evidence of pneumothorax or hemothorax. A repeat E-FAST excluded pericardial tamponade. Despite resuscitative efforts, her hemodynamic status deteriorated (HR 140, BP 90/50, MAP 60), prompting transfusion of a second unit of PRBC. Secondary survey revealed no further injuries. Bedside fetal ultrasonography confirmed a viable fetus but with reduced amniotic fluid. Given her instability, the patient was transferred emergently to the operating room. A midline laparotomy was

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performed, evacuating approximately one liter of hemoperitoneum. All quadrants were packed to allow anesthetic resuscitation. Exploration revealed a Zone 1 inframesocolic hematoma without solid organ or bowel injury, and the diaphragm was intact. For vascular control, supraceliac aortic exposure was obtained. An arterial line was secured, and blood products (PRBCs, FFP, and platelets) were prepared. Right visceral medial rotation exposed a penetrating wound near the root of the small bowel mesentery, revealing injuries to both the aorta and inferior vena cava (IVC) (Figure 1).

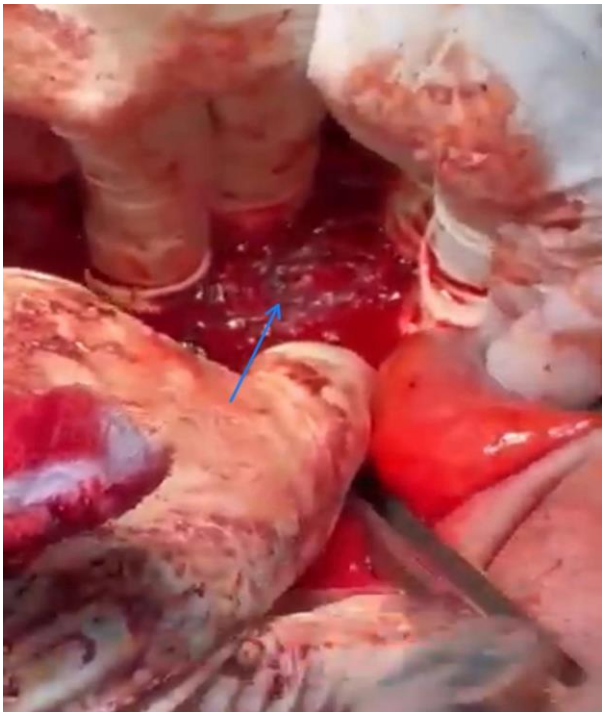
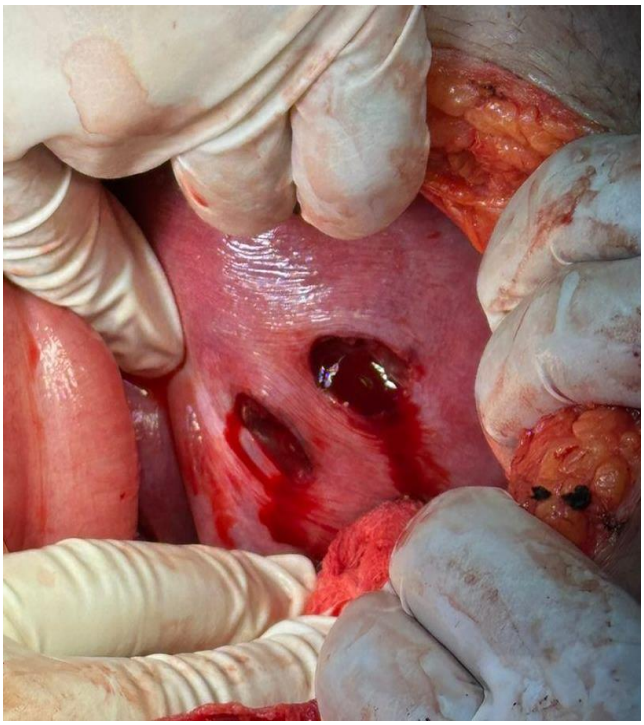


Figure 1: Intraoperative finding: showed aortic injury an infrarenal aortic clamp was applied, with proximal and distal control of the IVC achieved.

The IVC injury, located on the anterior wall, was repaired with a continuous 4-0 Prolene suture. A 1-cm defect on the right lateral wall of the aorta was repaired using figure-of-eight 4-0 Prolene sutures with adjunctive hemostatic material. Examination of the uterus revealed two full-thickness perforations of the fundus with absent amniotic fluid. The gynecology team performed a hysterotomy with delivery of a nonviable fetus (Figure 2).



A

B

Figure 2: Intraoperative finding:
A: showed upon examination full-thickness perforations of the fundus with absent amniotic fluid.
B: delivery of a non-viable fetus.

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The uterine defects were closed with 0 Vicryl. Following stabilization and acceptable venous blood gas results, two drains were inserted, and the abdomen was closed. The patient was transferred intubated to the intensive care unit (ICU) after a postoperative CT scan of the head, neck, chest, abdomen, and pelvis. Findings included: small right occipital subgaleal hematoma on CT head. **CT chest showed** subcutaneous emphysema consistent with stab tracts, moderate left pneumothorax withlung collapse, bilateral lower-lobe atelectasis, moderate left hemothorax, mild right pneumothorax, and left lung contusion (Figure 3).

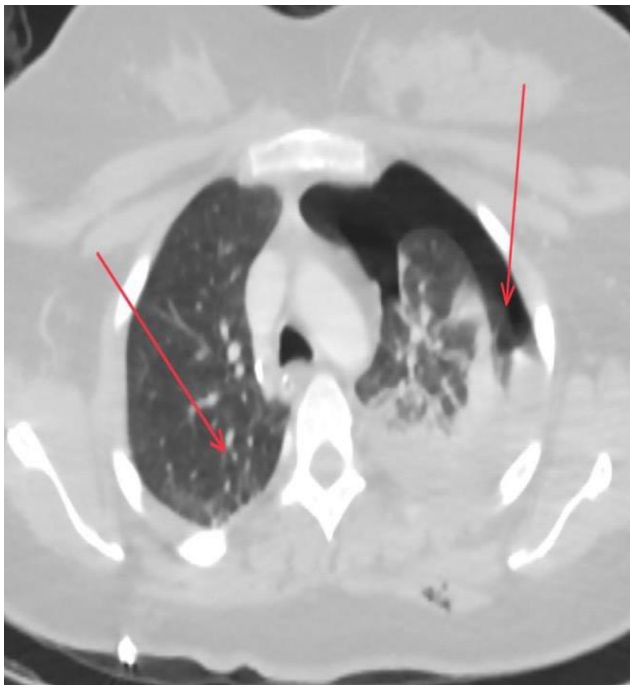

Figure 3: CT chest with contrast: showed Left upper lung there is a large area of heterogeneous opacity with air bronchograms and areas of consolidation.

CT abdomen/pelvis with contrast releaved a mural thrombus / intraluminal aortic thrombus with retroperitoneal hematoma with postoperative free gas; IVC poorly visualized, no new solid organ injuries (Figures 4 & 5).

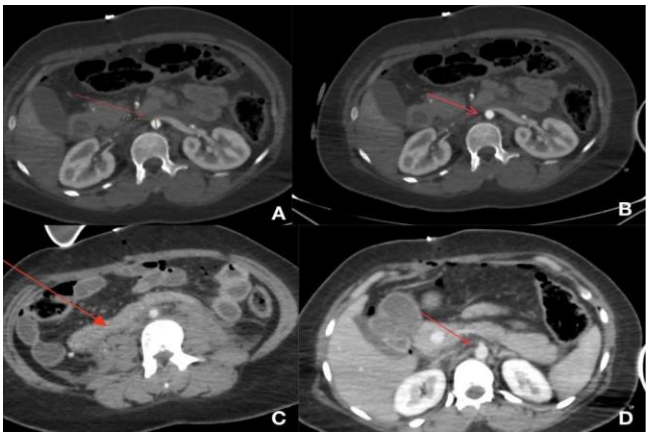

Figure 4: CT Abdomen with contrast:
A: Red arrow points to a well-defined intraluminal filling defect within the abdominal aorta, measuring approximately 9.6 mm. Appearance consistent with mural thrombus / intraluminal aortic thrombus.
B: Red arrow demonstrates intraluminal aortic filling defect. Aortic lumen remains patent with preserved contrast opacification.
C: retroperitoneal hematoma with postoperative free gas.
D: Red arrow demonstrates collapsed inferior vena cava (IVC).

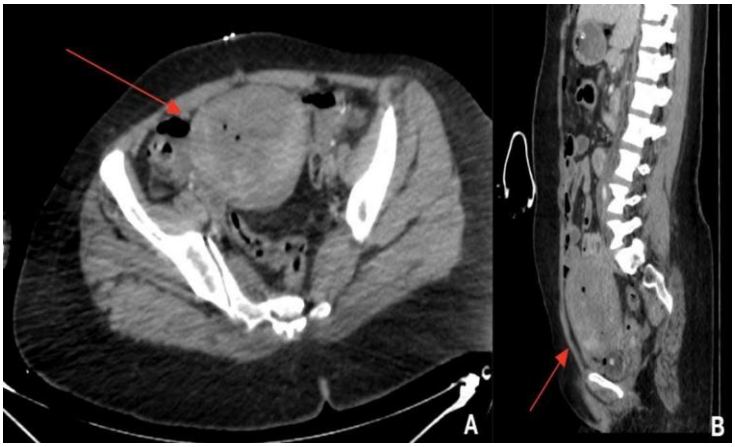

Figure 5:
A: Axial view of CT pelvis with contrast: central rounded soft-tissue density normal pelvic contents (bladder/uterine body/ adjacent bowel loop), Small focal high-density foci along the pelvis are most consistent with surgical clips/osseous structures or calcification
B: Sagittal view of CT abdomen/pelvis with contrast: a large, rounded, heterogeneous uterus no signs of perforation or extravastion.

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Postoperative day (POD) 0, a left chest tube was inserted due to hemothorax. By POD 2, the patient was extubated, alert, and oriented. Drain outputs included 300 mL from the right paracolic/major vessel on drain and 200 mL from the left paracolic/pelvic drain. The left chest tube drained 200 mL over 24 hours. On POD 4, she was transferred to the trauma ward in stable condition. By POD 6, she was tolerating oral intake, passing bowel motions, and her drain output had decreased to 75 mL of serous fluid from the left drain, which was removed along with the chest tube On POD 8, she underwent psychiatric evaluation and was discharged home in good condition. At two week follow-up, she remained asymptomatic with a soft, non-tender abdomen, a clean healed surgical wound, and was formally discharged from clinic follow-up.

3. Discussions:

Trauma during pregnancy is a major cause of maternal and fetal morbidity and mortality. It is the leading non-obstetric cause of maternal death, with motor vehicle accidents, falls, and interpersonal violence being the most common mechanisms [2]. Fetal loss occurs in approximately one-third of cases and is usually related to placental abruption, maternal hypovolemia, or direct uterine injury [2,6,8]. Notably, fetal demise may occur even without direct injury, owing to the placenta's sensitivity to circulating catecholamines. This sensitivity results in preferential shunting of maternal blood away from the uteroplacental circulation during hypovolemia [6]. Furthermore, because maternal blood volume increases significantly in late gestation, signs of hypoperfusion may be masked, and severe fetal distress can occur in the absence of overt maternal shock [7]. Isolated fetal injury without maternal trauma is rare [6]. Esposito et al. reviewed 79 pregnant trauma patients and reported a maternal mortality rate of 10%, similar to non-pregnant trauma patients, but fetal loss occurred in 34% of cases [8]. Fetal demise was not correlated with maternal hypoxia, shock, or seat belt use, and maternal vital signs were found to be unreliable indicators of fetal well-being. Importantly, diagnostic peritoneal lavage was shown to be safe and accurate in pregnant women, and seat belt use was associated with reduced maternal morbidity without increasing fetal injury risk [8].

Our case is particularly rare, involving penetrating abdominal trauma with combined aortic, IVC, and uterine injuries. Penetrating injuries to the abdominal aorta and IVC carry extremely high mortality, often exceeding 70–80% [1]. In Demetriades et al.'s series, prognosis depended heavily on rapid recognition and immediate vascular control [1]. The concomitant presence of IVC injury further increases lethality due to technical difficulties in exposure and control, and the risk of uncontrolled hemorrhage. Historically, open repair has been the mainstay of treatment for aortic injuries, requiring rapid proximal control by thoracotomy or laparotomy depending on the level of injury.Techniques such as clamp-and-sew provide effective hemorrhage control but carry the risk of spinal cord ischemia when cross-clamping is prolonged [4,5]. Advances in operative techniques and imaging have improved outcomes by reducing ischemia times. More recently, endovascular stent-grafting has become an alternative for managing traumatic aortic injuries, initially developed for non-traumatic aneurysms [9] and later extended to acute trauma [10]. Reports of more than 500 endovascular cases highlight benefits such as reduced blood loss, shorter operative times, and avoidance of single-lung ventilation, cross-clamping, and cardiopulmonary bypass [11,12]. Although most reported experience with endovascular therapy involves thoracic injuries, the principles may extend to abdominal trauma in stable patients when resources are available. However, in unstable penetrating abdominal trauma such as in our patient, rapid open repair remains the gold standard.

The uterine injury further complicated this case. Penetrating trauma to the gravid uterus is rare but is associated with poor fetal prognosis, even when initial fetal cardiac activity is observed. In this case, two full-thickness uterine perforations with absent amniotic fluid necessitated hysterectomy and resulted in fetal loss. This outcome emphasizes the principle that fetal survival is closely tied to maternal status, and maternal stabilization and survival must remain the priority [2,6].

Multidisciplinary collaboration was pivotal in this case. Trauma surgeons achieved hemorrhage control, obstetricians managed the uterine injury, anesthesiologists coordinated intraoperative resuscitation, and critical care specialists oversaw postoperative recovery. This team-based approach

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exemplifies best practice in managing complex trauma, allowing for maternal salvage despite catastrophic injuries.

4. Conclusion:

This case highlights the fundamental principles of trauma care in pregnancy. Maternal stabilization must always be prioritized, as maternal survival is the most important determinant of fetal outcome. In penetrating abdominal trauma, clinicians must maintain a high index of suspicion for vascular injury, as rapid hemodynamic deterioration is common. Early and coordinated multidisciplinary involvement— including trauma, vascular, anesthesia, and obstetrics teams—was critical to the successful management of this patient. Although the fetus could not be saved, prompt recognition, aggressive resuscitation, and timely surgical intervention resulted in maternal survival despite injuries that are typically fatal.

5. Disclosures:

Human subjects: Consent was obtained by all participants in this study.

Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following:

Payment/services info: All authors have declared that they received no financial support from any organization for the submitted work.

Financial relationships: All authors have declared that they have no financial relationships**.**

Other relationships: All authors have declared that no other relationships or activities could appear to have influenced the submitted work.

6. References

1. Demetriades D, Theodorou D, Murray J, Asensio JA, Cornwell EE 3rd, Velmahos G, et al. Mortality and prognostic factors in penetrating injuries of the aorta. *J Trauma*. 1996;40:761–3.
2. Fildes J, Reed L, Jones N, Martin M, Barrett J. Trauma: The leading cause of maternal death. *J Trauma*. 1992;32:643–5.
3. Peckham CH, King RW. A study of intercurrent conditions observed during pregnancy. *Am J Obstet Gynecol*. 1963;87:609–24.
4. von Oppell UO, Dunne TT, De Groot KM, Zilla P. Spinal cord protection in the absence of collateral circulation: meta-analysis of mortality and paraplegia. *J Card Surg*. 1994;9:685–91.
5. von Oppell UO, Dunne TT, De Groot MK, Zilla P. Traumatic aortic rupture: twenty-year meta-analysis of mortality risk of paraplegia. *Ann Thorac Surg*.1994; 58:585–93.
6. Morkovin V. Trauma in pregnancy. In: Farrel RG, editor. *OB/GYN emergencies: the first 60 minutes*, vol. 6. Rockville, USA: Aspen Publications; 1986. p. 71–86.
7. Lukaski HC, Siders WA, Nielsen EJ, Hall CB. Total body water in pregnancy: assessment by using bioelectrical impedance. *Am J Clin Nutr*. 1994;59:578–85.
8. Esposito TJ, Gens DR, Smith LG, Scorpio RJ, Buchman TG, Buechter KJ. Trauma during pregnancy: a review of 79 cases. *Arch Surg*. 1991;126:1073–8.
9. Parodi JC, Palmaz JC, Barone HD. Transfemoral intraluminal graft implantation for abdominal aortic aneurysms. *Ann Vasc Surg*. 1991;5:491–9.
10. Rousseau H, Midulla M, Marcheix B, et al. Indications for endovascular treatment: which treatment for acute traumatic aortic dissections? In: Amor M, Bergeron P, Inglese L, Ischinger T, Mathias K, Raithel D, editors. *Thoracic combo from theory to practice: thoracic aortic dissections and their endovascular treatment*. Marseille, France: Com; 2007. p. 192–202.
11. Tehrani HY, Peterson BG, Katariya K, et al. Endovascular repair of thoracic aortic tears. *Ann Thorac Surg*. 2006;82:873–7.
12. Agostinelli A, Saccani S, Borrello B, Nicolini F, Larini P, Gherli T. Immediate endovascular treatment of blunt aortic injury: our therapeutic strategy. *J Thorac Cardiovasc Surg*. 2006;131:1053–7.

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