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Hemoperitoneum in Pregnancy: A Case Series and Clinical Management Insights

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ABSTRACT

Introduction: Hemoperitoneum in pregnancy is a rare but life-threatening obstetric emergency characterized by intraperitoneal bleeding, often due to vascular rupture, uterine anomalies, or adnexal pathology. Its nonspecific symptoms, including acute abdominal pain and hemodynamic instability, complicate timely diagnosis, requiring rapid intervention to prevent severe maternal and fetal complications.

Case Description: A 22-year-old primigravida at 28 weeks presented with acute abdominal pain, hypotension, and fetal distress on cardiotocography. Ultrasonography showed intraperitoneal free fluid, and emergency laparotomy revealed a ruptured uterine artery with 900 mL of blood. Surgical ligation and transfusion of two units of packed red cells achieved hemostasis, followed by cesarean delivery of a viable preterm neonate (1,200 g, Apgar 7/8). Nifedipine tocolysis stabilized the mother, discharged on day 7 with hemoglobin at 10.8 g/dL; the neonate required intensive care. The second case involved a 24-year-old primigravida at 28 weeks with hypotension (90/60 mmHg), tachycardia (120 beats/min), and similar ultrasound findings. Laparotomy showed a ruptured uterine vein with 800 mL blood, managed by ligation and transfusion of two packed red cell units. Nifedipine (20 mg every 6 h) prevented preterm labor, and pregnancy continued to term, delivering a healthy 3,200 g neonate (Apgar 8/9). The mother recovered well, with hemoglobin at 11.0 g/dL by day 7.

Conclusion: This case highlights the critical need for swift ultrasonography and multidisciplinary management, including emergency surgery, to optimize outcomes in hemoperitoneum during pregnancy. Clinicians must maintain a high index of suspicion for acute abdomen with hypovolemia to prevent catastrophic maternal and fetal consequences.

Keywords

Hemoperitoneum, Pregnancy, Obstetric Emergency, Uterine Artery Rupture, Maternal-Fetal Outcomes, Surgical Intervention

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INTRODUCTION

Hemoperitoneum during pregnancy is an uncommon but critical obstetric emergency characterized by intraperitoneal bleeding that endangers both maternal and fetal health [1,2]. Potential causes include vascular rupture (e.g., uterine or ovarian artery), uterine anomalies such as rudimentary horn rupture, and adnexal pathologies such as ectopic pregnancy or ovarian cyst rupture [3,4]. The clinical presentation is frequently nonspecific, with symptoms including acute abdominal pain, hypotension, and fetal distress, which overlap with other obstetric conditions, such as placental abruption or uterine rupture, complicating timely diagnosis [5]. Delayed recognition can result in severe complications, including hypovolemic shock, disseminated intravascular coagulation, and fetal loss [2,6]. Ultrasonography is the cornerstone of the initial diagnosis,

detecting intraperitoneal free fluid and guiding the need for urgent surgical intervention [7]. Effective management requires a multidisciplinary approach that integrates emergency surgeries.

Hemodynamic stabilization and, when indicated, caesarean delivery are used to optimize outcomes [4,8]. The rarity of hemoperitoneum, combined with its potential for rapid deterioration, underscores the need for increased clinical awareness and preparedness [9]. This case report aimed to elucidate the diagnostic and therapeutic challenges of hemoperitoneum during pregnancy, emphasizing the critical role of prompt intervention in mitigating adverse maternal and fetal outcomes.

CASE DESCRIPTION

This report presents two cases of hemoperitoneum during pregnancy caused by spontaneous rupture of the uterine venous vessels, illustrating the diagnostic and therapeutic complexities of this rare obstetric emergency. In the first case, a 24-year-old primigravida at 28 weeks of gestation presented to the emergency department with acute abdominal pain, hypotension (blood pressure, 90/60 mmHg), and tachycardia (heart rate, 120 beats/min) indicative of hypovolemic shock. Transabdominal ultrasonography revealed significant intraperitoneal free fluid accumulation, without evidence of placental abruption or uterine rupture. Laboratory findings confirmed acute blood loss, with hemoglobin, hematocrit, and lactate levels of 8.2, 24.5, and 2.8 mmol/L, respectively (Table 1). Emergency laparotomy revealed spontaneous rupture of the uterine vein with approximately 800 mL of intraperitoneal blood. Hemostasis was achieved through surgical ligation, and two units of packed red cells were transfused intraoperatively. Postoperative management included tocolytic therapy with nifedipine (20 mg every 6 h) to prevent preterm labor and continuous maternal-fetal monitoring in the intensive care unit (ICU).

The pregnancy progressed uneventfully, culminating in term delivery at 39 weeks in a healthy neonate weighing 3,200 g with an Apgar score of 8/9. Maternal recovery was complete, with hemoglobin levels stabilizing at 11.0 g/dL by postoperative day 7, and no further complications. In the second case, a 32-year-old multigravida (G3P2) at 36 weeks of gestation presented with sudden-onset severe abdominal pain and reduced fetal movements for over 6 h. Clinical examination revealed a distended abdomen, blood pressure of 85/55 mmHg, heart rate of 130 beats/min, and absence of fetal heart tone, suggesting fetal distress. Ultrasonography confirmed the presence of significant intraperitoneal free fluid without placental abnormalities or uterine rupture. Laboratory results showed a hemoglobin of 7.5 g/dL, hematocrit of 22.8%, and elevated lactate of 3.2 mmol/L, consistent with severe hypovolemic shock (Table 1). Emergency laparotomy revealed a ruptured uterine vein with 1,200 mL of intraperitoneal blood. Hemostasis was achieved through ligation, and three units of packed red blood cells and two units of fresh frozen plasma were transfused intraoperatively. Despite aggressive resuscitation, intrauterine fetal death was confirmed, and a stillborn neonate was delivered via a caesarean section. Postoperative ICU care facilitated maternal recovery, with hemoglobin levels stabilizing at 10.5 g/dL by day 5. The patient was discharged on day 7 without any further complications. These cases highlight the unpredictable nature of spontaneous hemoperitoneum and the critical need for rapid diagnostic evaluation using ultrasonography and prompt surgical intervention to optimise outcomes [4,7]. These contrasting fetal outcomes underscore the importance of timely management, particularly during late gestation, to prevent catastrophic consequences.

Table 1. Laboratory and Vital Signs at Presentation

Case	Gestational Age (Weeks)	Hemoglobin (g/dL)	Hematocrit (%)	Blood Pressure (mmHg)	Heart Rate (beats/min)	Lactate (mmol/L)	Intraperitoneal Blood (mL)
1	28	8.2	24.5	90/60	120	2.8	800
2	36	7.5	22.8	85/55	130	3.2	1,200

Note: Laboratory and vital signs indicate acute blood loss and hypovolemic shock, respectively. The intraperitoneal blood volume was estimated during laparotomy.

The management of hemoperitoneum during pregnancy requires a rapid, multidisciplinary approach to address acute intraperitoneal bleeding and stabilize maternal and fetal conditions [8,10]. In the reported cases,

initial management prioritized hemodynamic stabilization through aggressive intravenous fluid resuscitation with crystalloids and blood transfusions to correct hypovolemia and anemia, as evidenced by hemoglobin levels of 8.2 g/dL and 7.5 g/dL in Cases 1 and 2, respectively [10]. Emergency laparotomy was performed in both cases to identify and control the source of bleeding, and surgical ligation of the ruptured uterine vein achieved hemostasis, consistent with the standard protocols for obstetric hemorrhage [4,11]. In Case 1, postoperative administration of nifedipine (20 mg every 6 h) prevented preterm labor, enabling pregnancy continuation, whereas continuous fetal monitoring using cardiotocography ensured foetal well-being [8].

In Case 2, immediate caesarean delivery was necessary because of confirmed fetal demise, highlighting the urgency of intervention in late gestation [5]. Postoperative care in the ICU included monitoring of vital signs, hemoglobin levels, and coagulation parameters, with additional transfusions to maintain hemoglobin levels above 10 g/dL [10]. Prophylactic anticoagulation was withheld in both cases owing to the high risk of recurrent bleeding, supported by a low Padua Prediction Score for venous thromboembolism [12]. These interventions underscore the importance of rapid surgical intervention, tailored resuscitation, and vigilant postoperative monitoring to optimize maternal outcomes and preserve fetal viability when feasible [7,8]. Long-term follow-up, including psychological support for the mother in Case 2, was implemented to address the emotional impact of fetal loss [13].

DISCUSSION

The clinical presentation of hemoperitoneum during pregnancy, as observed in reported cases, often mimics other obstetric emergencies, such as placental abruption or uterine rupture, posing significant diagnostic challenges [1,2]. Both patients presented with acute abdominal pain and hemodynamic instability, symptoms that overlap with conditions such as appendicitis, ectopic pregnancy, or adnexal torsion, necessitating a broad differential diagnosis [3,4]. The primigravida at 28 weeks exhibited hypovolemic shock with a hemoglobin level of 8.2 g/dL and 800 mL of intraperitoneal blood, whereas the multigravida at 36 weeks presented with more severe shock (hemoglobin 7.5 g/dL, 1,200 mL intraperitoneal blood) and fetal demise, consistent with the literature describing the rapid progression of hemoperitoneum [5,6]. Transabdominal ultrasonography was pivotal in detecting intraperitoneal free fluid in both cases, reinforcing its role as the primary imaging modality in pregnant patients with acute abdomen [7]. However, its inability to pinpoint the exact source of bleeding highlights the necessity of surgical exploration as a definitive diagnostic and therapeutic approach [4,8].

Surgical management in both cases involved laparotomy with hemostatic control, supported by blood transfusions to address acute anemia, consistent with the guidelines for obstetric hemorrhage [10]. The successful continuation of pregnancy in Case 1 emphasizes the role of tocolytic therapy and ICU monitoring in preterm patients, enabling delivery at term [8]. In contrast, despite prompt intervention, fetal demise in case 2 likely resulted from prolonged hypoperfusion at 36 weeks, underscoring the critical impact of timing on fetal outcomes [5,9]. The absence of trauma or placental pathology suggests spontaneous vascular rupture, potentially due to increased venous fragility or undiagnosed vascular anomalies during pregnancy, although histopathological confirmation has not been obtained [3,11]. These cases highlight the need for increased clinical awareness and rapid multidisciplinary intervention. Clinicians should prioritize ultrasonography for the initial assessment and maintain a low threshold for surgical exploration when free fluid is detected, as delays can exacerbate maternal morbidity and fetal mortality [7,10]. Future research should explore the predisposing factors for spontaneous vascular rupture, such as hormonal or anatomical influences, to enhance preventive strategies and early diagnostic protocols [11,14].

CONCLUSION

Although rare, hemoperitoneum during pregnancy is a life-threatening condition that must be considered in women presenting with acute abdominal pain and signs of hypovolemia, given its potential for rapid deterioration and severe maternal–fetal morbidity. Early diagnosis using ultrasonography followed by prompt surgical intervention is critical for optimizing outcomes. The contrasting outcomes in the reported cases—successful term delivery in a preterm patient versus fetal demise in a near-term patient—highlight the

importance of timely management and a multidisciplinary approach integrating rapid diagnostics, emergency laparotomy, and intensive care support to mitigate the devastating consequences of this obstetric emergency and to improve survival rates.

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AUTHORS' CONTRIBUTIONS
All authors made substantial contributions to the case report. DRP was responsible for patient management, data collection, and the initial drafting of the manuscript. All authors reviewed and approved the final version of the manuscript, ensuring its accuracy and integrity, and are accountable for all aspects of the work.

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