



Research Article

Near-Miss Maternal Mortality: Survival After Massive Postpartum Hemorrhage, Disseminated Intravascular Coagulopathy, and Multiorgan Failure

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Abstract

Background: Postpartum hemorrhage (PPH) is a leading cause of maternal morbidity and mortality worldwide. Primary PPH, occurring within the first 24 hours after delivery, is the most common form and may rapidly progress to disseminated intravascular coagulation (DIC), multiorgan failure, and maternal near-miss events if bleeding is not promptly controlled. Patients with underlying thrombophilia are at increased risk for severe hemorrhage and coagulopathy. **Case Presentation:** A 35-year-old gravida 8, para 4, aborta 3 woman with Factor V Leiden thrombophilia presented for elective induction of labor at 38+4 weeks. Antenatal care was suboptimal. She initially underwent vaginal delivery but was converted to Cesarean section due to labor complications. Immediately postpartum, she developed severe PPH secondary to uterine atony, unresponsive to uterotonics and balloon tamponade. Total abdominal hysterectomy was performed, but hemorrhage persisted. **Interventions:** Surgical re-exploration identified bleeding from the left infundibulopelvic ligament. Hemostasis was achieved via bilateral internal iliac artery ligation and left oophorectomy. The patient received approximately 60 units of blood products, including packed RBCs, platelets, and fresh frozen plasma. She required ICU admission for disseminated intravascular coagulation (DIC), multiorgan failure, vasopressor support (norepinephrine and vasopressin), mechanical ventilation, and empirical broad-spectrum antibiotics. **Outcome:** The patient gradually improved, with hemodynamic stabilization, resolution of DIC, and normalization of renal and hepatic function. She was discharged in stable condition on postpartum day 11. **Conclusion:** This case demonstrates that hysterectomy may not always control catastrophic PPH. Early recognition of alternative bleeding sources, aggressive resuscitation, and multidisciplinary critical care are essential, especially in high-risk patients with thrombophilia, to improve survival in patients with refractory primary postpartum hemorrhage.

Keywords

Postpartum Hemorrhage, Disseminated Intravascular Coagulation, Multiorgan Failure, Thrombophilia, Case Report

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1. Introduction

Postpartum hemorrhage (PPH) is defined by the American College of Obstetricians and Gynecologists (2017) as blood loss exceeding 500 mL after vaginal delivery or 1000 mL after Cesarean section within 24 hours, with clinical signs of hypovolemia regardless of delivery mode [1, 3]. PPH can be classified as primary (within 24 hours of delivery) or secondary (occurring after 24 hours up to 12 weeks postpartum) [3]. The most common cause of PPH is uterine atony, although trauma, retained tissue, and coagulopathies may also contribute [3, 4]. Globally, approximately 3% of deliveries are complicated by PPH, which remains a leading cause of maternal morbidity and mortality, accounting for nearly 25% of pregnancy-related deaths, especially in low- and middle-income countries [2, 3].

Management of PPH requires a multidisciplinary approach, including assessment of blood loss, fluid resuscitation, correction of coagulopathy, and source control. Stepwise interventions range from uterotonics and mechanical measures to surgical procedures, with hysterectomy considered a last-resort life-saving option if other measures fail [5, 6]. Prophylactic strategies include active management of the third stage of labor and early identification of high-risk patients, including those with thrombophilia, prior PPH, or other coagulopathies.

This case was selected for reporting due to its rarity and clinical significance: despite stepwise management culminating in hysterectomy, the patient continued to bleed due to occult retroperitoneal hemorrhage, compounded by underlying thrombophilia, developed disseminated intravascular coagulation (DIC), and progressed to multiorgan failure requiring intensive care. It highlights the importance of early recognition of alternative bleeding sources, aggressive resuscitation, and multidisciplinary critical care in high-risk patients.

2. Case Presentation

A 35-year-old gravida 8, para 4, aborta 3 woman presented at 38+4 weeks of gestation for elective induction of labor. Her obstetric history was significant for recurrent pregnancy loss associated with thrombophilia (Factor V Leiden). She was treated with low molecular weight heparin during the first four months of the current pregnancy and continued on daily aspirin. Antenatal care was suboptimal, with no glucose challenge test or detailed ultrasound performed.

Her previous obstetric history included four spontaneous vaginal deliveries complicated by PPH that did not require transfusions, and one dilation and curettage (D&C). She has a penicillin allergy. Family history was unremarkable.

The patient was initially planned for vaginal delivery; however, due to labor complications, an emergency cesarean section was performed, resulting in delivery of a healthy male infant. Immediately postpartum, she developed severe PPH secondary to uterine atony [12]. Initial medical management with uterotonics and a Bakri balloon failed to control the hemor-

rhage, and she became hemodynamically unstable, necessitating multiple blood transfusions. Persistent hemorrhage prompted total abdominal hysterectomy, during which a small retroperitoneal hematoma was identified in the left cardinal ligament.

On the first postoperative day, intra-abdominal bleeding had persisted, and she required another surgical exploration, and approximately 2000 mL of clotted blood was evacuated. Active bleeding was found to arise from the left infundibulopelvic (suspensory) ligament. Hemostasis was achieved via bilateral internal iliac artery ligation, and left oophorectomy was performed as well. She received 3 units of fresh frozen plasma, 3 units of platelets, and 2 units of packed red blood cells (RBCs) during this surgery.

At intensive care unit admission (ICU), she developed disseminated intravascular coagulation (DIC), with multiorgan failure affecting renal (creatinine = 4.5 mg/dL), hepatic (aspartate transaminase (AST) = 1240 U/L, alanine transaminase (ALT) = 836 U/L), respiratory, and hematologic (platelet count dropping to 35,000/ μ L) systems. She experienced transfusion-related acute lung injury (TRALI), requiring oxygen therapy and mechanical ventilation. Additionally, high doses of vasopressin and norepinephrine were administered. About 60 units of blood products were given. Additionally, empirical broad-spectrum antibiotics, including metronidazole, vancomycin, and meropenem, were administered. The patient gradually improved, and was discharged on postpartum day 11 with normalization of lab tests and symptomatology.

3. Discussion

Postpartum hemorrhage (PPH) is defined as an estimated blood loss of over 500 mL after a vaginal delivery or an estimated blood loss of over 1,000 mL after a cesarean delivery [3, 7]. It remains a leading cause of maternal morbidity and mortality worldwide, particularly in low- and middle-income countries [9, 10]. This case report presents an unusual and severe case of refractory primary postpartum hemorrhage complicated by persistent retroperitoneal bleeding, disseminated intravascular coagulation, multiorgan failure and massive transfusion, illustrating the complexity of managing high-risk postpartum hemorrhage [8, 11].

Uterine atony is the leading cause of PPH; it is estimated to contribute to about 70 to 80% of cases of PPH [15], regardless of the mode of delivery. Consequently, a stepwise approach to management is established, beginning with bimanual uterine massage and administration of uterotonic agents such as oxytocin, followed by second-line agents including methylergonovine or prostaglandins in cases of persistent bleeding. When medical therapy fails, mechanical and surgical alternatives are considered, including uterine balloon tamponade and uterine compression suture techniques such as B-Lynch as fertility-preserving options. In refractory cases, more invasive

procedures such as uterine artery ligation or hysterectomy may be required as life-saving measures [6].

In this case, the hemorrhage persisted despite the stepwise approach to its management, which included uterotonic agents, balloon tamponade, and finally hysterectomy. This emphasizes that hysterectomy, although considered a definitive life-saving intervention, may fail to control bleeding when it originates from extra-uterine sources [6, 16]. Re-exploration identified active bleeding from retroperitoneal vessels and the left infundibulopelvic ligament, highlighting the presence of occult retroperitoneal hemorrhage that was not initially apparent. This underscores the need to maintain a high index of suspicion for alternative bleeding sources in cases of uncontrolled hemorrhage despite conventional management strategies. Definitive control of bleeding was finally attained through ligation of the bilateral internal iliac arteries and left oophorectomy, reinforcing the need to pursue aggressive surgical interventions when first-line measures are ineffective [16].

In our patient, the underlying thrombophilic condition further contributed to the complexity of the clinical course. Although thrombophilia is typically associated with a prothrombotic state, it may paradoxically predispose to consumptive coagulopathy in the setting of massive hemorrhage. This interplay between thrombosis and bleeding likely exacerbated the severity of DIC and contributed to persistent hemorrhage despite standard interventions [6, 13, 14].

In the patient's case, DIC was most likely triggered by massive blood loss, compounded by tissue hypoperfusion and underlying thrombophilia, leading to widespread activation of the coagulation cascade with subsequent consumption of clotting factors and platelets, resulting in coagulopathy-driven hemorrhage. This is further evidenced by the results of the blood studies, which reflected ongoing consumptive coagulopathy requiring prompt correction with blood transfusion products, including fresh frozen plasma, platelets, and cryoprecipitates [14].

Massive transfusion in itself carries the risks of TRALI, hypocalcemia, hypothermia, and dilutional coagulopathy [14], all of which contributed to the clinical complexity of the patient. The development of multiorgan failure (renal, hepatic, respiratory) was a direct consequence of both hypoperfusion and DIC-induced microthrombi formation.

Our patient was admitted to the intensive care unit (ICU) for hemodynamic support, vasopressor treatment, and ventilatory support, which was critical for patient survival. The cumulative effect of vasopressin, noradrenaline, and empirical broad-spectrum antibiotics prevented secondary sepsis and further organ dysfunction. Recovery of renal and hepatic function in 11 days suggests successful critical care and gradual resolution of DIC. The case supports previous reports that early multidisciplinary critical care intervention improves survival in even near-miss maternal cases [10].

This case highlights several important clinical considerations: hysterectomy is not always definitive in controlling PPH; occult retroperitoneal bleeding should be considered in

refractory cases; early correction of coagulopathy is essential; and the interaction between hemorrhage, thrombophilia, and DIC significantly complicates management.

This case has several limitations. As a single case report, the findings may not be generalizable. The precise contribution of the underlying thrombophilic condition to the development of DIC cannot be determined. Furthermore, it is possible that the lack of advanced coagulation monitoring may have limited the ability to provide more targeted hemostatic therapy.

4. Conclusion

This case highlights key clinical lessons in the management of severe PPH:

- 1) Consider alternative bleeding sources beyond the uterus when hemorrhage persists despite standard interventions.
- 2) Early recognition and prompt management of DIC are essential to prevent progression to multiorgan failure.
- 3) Multidisciplinary critical care involvement significantly improves survival in near-miss maternal cases.

Abbreviations

ALT	Alanine Aminotransferase
AST	Aspartate Aminotransferase
CS	Cesarean Section
D&C	Dilation and Curettage
ICU	Intensive Care Unit
PPH	Postpartum Hemorrhage
RBC	Red Blood Cells
TRALI	Transfusion-Related Acute Lung Injury

Author Contributions

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Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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