

Identification and Management of Obstetric Hemorrhage



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KEYWORDS

- Obstetric hemorrhage • Uterine atony • Transfusion • Fibrinogen
- Recombinant activated factor VII • Tranexamic acid • Cell salvage

KEY POINTS

- Prevention of adverse outcomes in obstetric hemorrhage depends on stepwise, escalating interventions, including pharmacologic, hematological, radiological, and surgical interventions.
- Timely red blood cell transfusion is critical in the maintenance of adequate intravascular volume, tissue oxygenation, and effective coagulation.
- Given the significant risk of coagulopathy with massive bleeding, fresh frozen plasma should be considered early in the resuscitation of obstetric hemorrhage.
- Fibrinogen may play a unique role in the diagnosis and management of obstetric hemorrhage.
- Intraoperative cell salvage techniques decrease transfusion requirements with minimal additional risk.

INTRODUCTION

Obstetric hemorrhage remains the leading cause of maternal death and severe morbidity worldwide. In developing nations, including Africa and Asia, peripartum hemorrhage is responsible for 30% of all direct maternal mortality.¹ Despite advances in obstetric and transfusion medicine, well-resourced countries are not impervious to this potentially catastrophic complication, with peripartum bleeding accounting for 3.4% and 11.8% of maternal deaths in the United Kingdom and United States, respectively.^{2,3} Significant morbidity, in the form of loss of fertility, pituitary necrosis, renal insufficiency, coagulopathy, and respiratory failure, is also associated with severe peripartum bleeding.⁴ Although uterine atony is the most common cause of hemorrhage, abnormal placentation, coagulation disorders, and genital tract trauma also contribute to significant morbidity and mortality. Despite the identification of many

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characteristics associated with obstetric hemorrhage, most parturients who subsequently experience significant bleeding have no recognizable risk factors. Given the inability to reliably predict patients at high risk for obstetric hemorrhage, all parturients should be considered susceptible, and extreme vigilance must be exercised in the assessment of blood loss and hemodynamic stability during the peripartum period. Obstetric-specific hemorrhage protocols, facilitating the integration and timely escalation of pharmacologic, radiological, surgical, and transfusion interventions, are critical to the successful management of peripartum bleeding.

DEFINITION OF OBSTETRIC HEMORRHAGE

The precise definition of obstetric hemorrhage remains nebulous, with numerous classification systems currently in use worldwide (**Box 1**).^{5–7} Given the dynamic changes in plasma volume commonly accompanying the peripartum period, the use of acute changes in hematocrit (Hct) is of limited utility in the timely diagnosis of significant bleeding. Most international guidelines rely on estimation of blood loss and/or hemodynamic instability to identify peripartum hemorrhage. In the United States, blood loss

Box 1

Summary of international obstetric hemorrhage definitions currently in use

American Congress of Obstetricians and Gynecologists Guidelines

- “No single, satisfactory definition⁶
- Conventional definition:
 - Blood loss greater than 500 mL following vaginal delivery
 - Blood loss greater than 1000 mL following cesarean delivery

Australian Guidelines

- Blood loss greater than 500 mL following vaginal delivery
- Blood loss greater than 750 mL following cesarean delivery

Austrian Society of Obstetrics and Gynaecology⁶

- Blood loss 500 to 1000 mL with clinical signs of hypovolemic shock
- Blood loss greater than 1000 mL

German Society of Obstetrics and Gynaecology⁶

- Blood loss greater than 500 mL following vaginal delivery
- Blood loss greater than 1000 mL following cesarean delivery

Royal College of Obstetricians and Gynaecologists⁶

- Blood loss 500 to 1000 mL
- Severe obstetric hemorrhage
 - Blood loss greater than 1000 mL
 - Blood loss 500 to 1000 mL with clinical signs of hypovolemic shock

World Health Organization⁵

- Blood loss greater than 500 mL
- Severe obstetric hemorrhage
 - Blood loss greater than 1000 mL

Adapted from Rath WH. Postpartum hemorrhage—update on problems of definitions and diagnosis. Acta Obstet Gynecol Scand 2011;90(5):421–8.

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