

# Massive Blood Transfusion in a Case of Ruptured Uterus - A Multidisciplinary Challenge

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**Abstract:** *Background:* Obstetric haemorrhage remains a leading cause of maternal morbidity and mortality, often requiring rapid multidisciplinary coordination. *Case:* We present a case of a 42-year-old multigravida at 32+6 weeks gestation who presented in hypovolemic shock secondary to ruptured placenta previa with hemoperitoneum. The patient underwent emergency caesarean section followed by obstetric hysterectomy. Anaesthetic management was focused on airway control, massive transfusion protocol, and haemodynamic stabilisation using multiple inotropes and vasopressors. A total of 8 units of packed red blood cells, 10 units of fresh frozen plasma, and 8 units of random donor platelets were transfused intraoperatively. *Conclusion:* Early recognition, activation of the massive transfusion protocol, and multidisciplinary coordination are critical in successful management of catastrophic obstetric haemorrhage.

**Keywords:** Massive transfusion; Ruptured uterus; Obstetric haemorrhage; Anaesthetic management; Hypovolemic shock; Obstetric hysterectomy

## 1. Background

Ruptured uterus is a life-threatening obstetric emergency associated with high maternal and perinatal mortality. Prompt recognition and early surgical intervention are crucial for survival. Anaesthetic management in such cases is challenging due to hypovolemia, coagulopathy, and the need for rapid blood component therapy. Implementation of a massive transfusion protocol (MTP) and maintenance of haemodynamic stability form the cornerstone of intraoperative management (1,2).

## 2. Case Report / Procedure

A 42-year-old woman, gravida 3 para 2 live 2, with 32+6 weeks of gestation and previous two Previous LSCS, presented with complaints of breathlessness and generalized weakness for two days. She had a history of chronic hypertension and overt diabetes mellitus on medication. On arrival, she was drowsy but arousable, tachycardic (146 bpm), and hypotensive (80/50 mmHg). Initial evaluation revealed features of severe hypovolemic shock. Two large-bore IV cannulas were secured, resuscitation was initiated, and she was intubated following rapid sequence induction due to falling GCS and respiratory distress. She was started on infusions of noradrenaline and atracurium and immediately shifted to the operation theatre for emergency lower segment caesarean section (LSCS).

Intraoperatively, approximately 1–1.5 L of hemoperitoneum was noted with placental rupture. Following delivery of the baby, uterotonic agents were administered, but persistent bleeding led to obstetric hysterectomy. Urosurgery consultation was taken for bladder repair. A central venous line and a femoral arterial line were secured for invasive monitoring. During the procedure, the patient developed sudden bradycardia followed by pulseless electrical activity (PEA). Cardiopulmonary resuscitation (CPR) was immediately initiated as per ACLS protocol. The patient

received Inj. Atropine 1 mg IV and Inj. Adrenaline 1 mg IV with high-quality chest compressions. After two minutes, a palpable pulse was regained; however, she subsequently developed ventricular tachycardia (VT). A DC shock of 200 joules was delivered, successfully reverting the rhythm to sinus tachycardia.

Following return of spontaneous circulation (ROSC), inotropic and vasopressor supports were escalated- Noradrenaline (up to 20 mL/hr), Adrenaline, Vasopressin, and Dobutamine infusions were titrated according to hemodynamic response. The procedure was continued under close invasive monitoring.

Massive transfusion was initiated with 8 units of PRBCs, 10 units of FFP, and 8 units of RDP, along with crystalloids and colloids. Sodium bicarbonate, calcium gluconate, and warming measures were used. Estimated blood loss was approximately 8500 mL. The patient was shifted to SICU postoperatively on PRVC ventilation with inotropic supports.

## 3. Discussion

Massive obstetric haemorrhage requires rapid, coordinated action among anaesthesiologists, obstetricians, surgeons, and intensivists (3,4). The timely initiation of a massive transfusion protocol helps correct the 'lethal triad' of hypothermia, acidosis, and coagulopathy (5,6). Maintaining a balanced transfusion ratio (PRBC:FFP:Platelet  $\approx$  1:1:1) optimizes oxygen delivery and coagulation status (7). In this case, early airway control, invasive monitoring, prompt blood product replacement, and inotropic titration were essential for stabilization. Etomidate and atracurium were chosen to minimize haemodynamic disturbance during induction (8). Use of PRVC ventilation improved oxygenation while reducing airway pressures. Postoperative management focused on correction of metabolic acidosis, monitoring for coagulopathy, and prevention of hypothermia (9,10).

#### 4. Conclusion

Successful management of catastrophic obstetric haemorrhage depends on early diagnosis, prompt surgical intervention, and activation of massive transfusion protocols. Multidisciplinary teamwork between anaesthesiology, obstetrics, urosurgery, and intensive care units is the cornerstone for optimal outcomes.

#### References

- [1] Sholapurkar SL. Rupture of the uterus and uterine dehiscence: A review. *Obstet Gynecol Surv.* 2020;75(1):55–68.
- [2] Anderson JM, Etches D. Prevention and management of postpartum hemorrhage. *Am Fam Physician.* 2007;75(6):875–882.
- [3] Allard S, Green L, Hunt BJ. Massive transfusion in obstetric haemorrhage. *Semin Hematol.* 2020;57(1):17–22.
- [4] World Health Organization. WHO recommendations for the prevention and treatment of postpartum haemorrhage. Geneva: WHO; 2012.
- [5] Pacheco LD, Saade G, Hankins GDV. Massive transfusion protocols for the obstetric patient. *Obstet Gynecol Clin North Am.* 2016;43(4):639–647.
- [6] Hunt BJ. The current place of tranexamic acid in the management of bleeding. *Anaesthesia.* 2015;70 Suppl 1:50–53.
- [7] Holcomb JB, et al. The balanced ratio of blood products in massive transfusion. *Ann Surg.* 2015;261(5):911–918.
- [8] Butterworth J, Mackey DC, Wasnick JD. Morgan & Mikhail's Clinical Anesthesiology. 7th ed. New York: McGraw-Hill; 2022.
- [9] ACOG Practice Bulletin No. 183: Postpartum Hemorrhage. *Obstet Gynecol.* 2017;130(4):e168–e186.
- [10] Shields LE, Smalarz K, Reffigee L. Comprehensive maternal hemorrhage protocols reduce maternal mortality. *Am J Obstet Gynecol.* 2011;205(4):368–374.