



## A CASE OF CARDIAC ARREST DUE TO OBSTETRIC HEMORRHAGE MANAGED WITH PERIPARTUM HYSTERECTOMY AND SUCCESSFUL DIC MANAGEMENT

### Obstetrics & Gynaecology

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### ABSTRACT

Massive obstetric hemorrhage can occur both during antenatal and postnatal periods. Massive obstetric hemorrhage increases the risk of maternal morbidity and mortality. We report a case of 22-year-old, para 1, and live 1, low-risk woman with no comorbidities who presented with massive obstetric hemorrhage. The patient had cardiac arrest which she revived after resuscitation. A peripartum hysterectomy was performed after all failed medical methods for managing postpartum hemorrhage. In the postoperative period, she developed disseminated intravascular coagulation (DIC) and subsequently pulmonary edema due to massive fluid transfusion. A multidisciplinary team management approach was employed to save her life. Massive obstetric hemorrhage with DIC and pulmonary edema is a life-threatening condition. Timely active intervention with the cooperation of intensivists and hematologists can save lives.

### KEYWORDS

Massive obstetric hemorrhage, Peripartum hysterectomy, DIC, Pulmonary edema

### INTRODUCTION

Postpartum hemorrhage (PPH) is defined as blood loss of more than 500 ml from the genital tract in the case of vaginal delivery and more than 1 liter in the case of cesarean section. PPH is the leading cause of maternal morbidity and mortality worldwide and it is the most important cause of obstetric ICU admission (1-2). Massive obstetric hemorrhage is defined as blood loss of more than 1litres or signs and symptoms of hypovolemia (3). Early identification and management of massive obstetric hemorrhage are crucial to prevent sequelae such as metabolic acidosis, hypothermia, coagulopathy, and anemia-related morbidity. DIC is a major complication of massive obstetric hemorrhage. DIC is characterized by an imbalance of hemostasis in the body in which there is blood coagulation activation, resulting in fibrin production and deposition, widespread formation of microvascular thrombi in small blood vessels (thrombosis), and plasmin activation, leading to excessive bleeding and multiple organ dysfunction (4). DIC usually occurs after an underlying cause that needs to be corrected for treatment (5). Currently, no specific laboratory or clinical tests or risks can accurately predict (6). Therefore, it is important to categorize the patients based on high-risk factors. In this case report we emphasize the near-miss event due to a massive obstetric hemorrhage which was further complicated by DIC. We managed to treat DIC in cardiac arrest and revive the patient.

### Case Presentation

We report a case of a 22-year-old female, para 1 live 1, who was delivered at a private hospital via cesarean section for non-progress of labor. The patient was referred to our hospital due to postpartum hemorrhage and hypovolemic shock. She arrived at our emergency department with poor general condition, pulse of 140/min feeble, BP of 70/50 mm Hg, chest clear bilaterally, and SpO<sub>2</sub> of 94% on room air. She was immediately shifted to the labor room, where she had a cardiac arrest. Cardiopulmonary resuscitation (CPR) was started immediately, with simultaneous IV and central line access. IV fluids were administered, and vasopressors were started. An anesthetist on duty intubated the patient. Examination revealed severe pallor, drowsiness, and a well-retracted uterus. Per speculum 200 cc of clots with no active bleeding seen. A tablet of misoprostol (1000 µg) was administered per-rectally, and an injection of carboprost was given intramuscularly. IV antibiotics and injectable tranexamic acid were also given. ABG findings were pH 6.9, pCO<sub>2</sub> 14.2, pO<sub>2</sub> 281 (SIMV mode with FiO<sub>2</sub> 90 PEEP 5), lactate 13.2, HCO<sub>3</sub> 4.7.

No intrauterine and peri-uterine collections were found on ultrasound. Four units of PRBC, 4 units of platelets, and four units of FFP were arranged. Fluid resuscitation and one unit of PRBC transfusion were performed, but there was no improvement in vitals, so noradrenaline and vasopressin were started. Repeat vaginal examination removed around 200 cc of clots, although the uterus was well-contracted. A decision for vaginal exploration in the operation theater was taken, and high-risk consent was obtained from the attendants. Vaginal exploration revealed a small 2 cm buttonhole tear at the anterior cervix, which was bleeding and subsequently repaired. However, active bleeding continued, and considering the patient's deteriorating condition, exploratory laparotomy was performed. A hematoma in the

lower segment extending to the left broad ligament (around 4x3 cm) and generalized oozing from multiple sites were found. A peripartum hysterectomy was performed after discussing with family members and informing them about the intractable postpartum hemorrhage. During surgery, two units of PRBC, four units of FFP, and two units of platelets were transfused.

The patient was shifted to the SICU for ventilatory support, and two more units of PRBC were transfused that evening. Four hours post-surgery, the patient developed hematuria indicating DIC. Coagulation profile: prothrombin time 37.7 sec, INR 2.69, APTT 96.7 sec, serum fibrinogen 104 mg/dl, D-Dimer 0.85 µg/dl, platelet count 58,000, suggesting DIC due to massive obstetric hemorrhage. Four more units of FFP were transfused. Repeat PT INR was 6.87 with PT 90.0 sec. Peripheral blood smear showed clumping of platelets with a count of 28,000. The patient had worsening respiratory function due to a massive transfusion. A clinical hematologist was consulted for worsening DIC and respiratory function, and further transfusions were withheld. On postoperative day two, unfractionated heparin 40 mg subcutaneously was started until the patient was bed-bound and monitored with peripheral blood smears. Urine culture and endotracheal tube culture samples were negative. With ICU team resuscitative measures, noradrenaline was tapered to 2 ml/hour, and the patient was extubated 48 hours post-surgery. Limb physiotherapy was continued. Urine cleared on postoperative day three, and the abdominal drain was removed. By the third postoperative day, three units of PRBC, eight units of FFP, and four units of platelets had been transfused. The dressing was changed on the third postoperative day, and it was dry. On the fifth postoperative day, the patient was shifted to the obstetric ward with stable vitals. She maintained 95% oxygen saturation on six liters of oxygen. Her SGOT and SGPT were 332 and 351, respectively, serum creatinine 1.6, hemoglobin 6.5 gm/dl, total leukocyte count 19,000, and platelet count 39,000 with no bleeding diathesis. Injectable antibiotics were continued. On the seventh postoperative day, one unit of PRBC was transfused. Every third day, complete blood count, liver, and renal profiles were sent, showing an improving trend. The central line was removed on the eighth postoperative day, and stitch line sutures were removed on the ninth postoperative day. On the tenth postop day, the patient complained of swelling in her inguinal and scalp regions, small hematomas formed due to thrombocytopenia while shifting the patient and femoral taping site. Local anti-thrombotic ointment was applied. Her baby was admitted to the NICU for hyperbilirubinemia and neonatal sepsis for 15 days. The patient was discharged in healthy condition with her baby on the 20th postoperative day.

### DISCUSSION

Massive obstetric hemorrhage can lead to a life-threatening condition called Disseminated Intravascular Coagulation (DIC). Management of DIC in pregnancy is challenging, as DIC is always secondary to an underlying disorder. It is associated with pregnancy complications such as placental abruption, HELLP syndrome, preeclampsia, sepsis, postpartum hemorrhage (PPH), acute fatty liver, and amniotic fluid embolism. DIC due to massive blood loss causes dilution or consumption coagulopathy. DIC is a dynamic condition requiring

evaluation of both clinical and laboratory parameters. Details of investigations such as bleeding time (BT), clotting time (CT), clot retraction time (CRT), coagulation profile, serum fibrinogen levels, and fibrin degradation products (FDPs) were noted from hospital records(3,7,8). Senturk, et al. advocated that delays in seeking help from home to a higher center contribute to increased morbidity and mortality of mothers and newborns, a similar condition is seen in our case (9). Stella D'Arpe et al. documented uterine atony and traumatic PPH as leading causes of peripartum hysterectomy, as in this case (10). Sarojini et al. noted that DIC developed in 14.6% of PPH cases, and found that 20-25 years was the age range in 40.6% of cases, similar to our patient who was 22 years old (8). Our hospital is under the Janani Shishu Suraksha Karyakaram program of the Government of India, which provides free treatment to mothers and newborns, and the 24-hour availability of blood in our hospital's blood bank is a boon for patients. Meghan G. Hill et al also stated in his article that DIC management in massive obstetric hemorrhage is a challenging task and needs monitoring of all parameters to correct hypovolemia and coagulation profile (11).

## CONCLUSION

Postpartum hemorrhage is a life-threatening condition, and the postpartum period needs to be monitored carefully. Each case requires an individual assessment of high-risk factors. Early detection and timely intervention can save many lives. More studies should be conducted to predict DIC. Massive obstetric hemorrhage with DIC and pulmonary edema is a life-threatening condition. Lives can be saved with timely active intervention with the cooperation of intensivists and hematologists. Establishing an obstetric ICU will be a boon for sick patients having pregnancy-associated complications. This case emphasizes the need for clinical protocols to manage high obstetric conditions with the help of the multidisciplinary team approach. More antenatal studies should be encouraged for risk assessment tools of DIC due to postpartum hemorrhage.

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