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Case Report

Perioperative Anesthesia Management of a Patient with Triplet Pregnancy Who Developed Hemorrhage Due to Uterine Atony during Cesarean Section: A Case Report

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ABSTRACT

The incidence of postpartum hemorrhage (PPH) is increased in multiple pregnancies and is an important cause of maternal death. Controlling bleeding and correct anesthesia management during this period are essential.

In our 35-year-old patient with triple pregnancy, hemorrhage due to uterine atony developed during C/S surgery. We aimed to discuss the anesthesia management of PPH in our patient who underwent a total abdominal hysterectomy and bilateral salpingectomy (TAH BS) due to continued bleeding during and after C/S, with literature.

We think that morbidity and mortality rates can be reduced in the perioperative period for PPHs with the help of multidisciplinary approach, rapid action, and close follow-up.

In recent years the number of multiple pregnancies has increased due to assisted reproductive techniques [1]. There is an increase in maternal-fetal morbidity and mortality rates due to the increased incidence of certain complications in multiple pregnancies [2-3]. The marginal increase in risk in multiple pregnancies with triplets, quadruplets and higher numbers is even higher than in twin pregnancies [4]. In addition to fetal complications such as prematurity, growth retardation, and low birth weight, there is an increase in maternal complications such as anemia, hyperemesis gravidarum, preeclampsia, eclampsia, HELLP (hemolysis, elevated liver enzymes, low platelet) syndrome, placenta previa, premature rupture of membranes and gestational diabetes [5-6]. Increased PPHs are one of the most important complications that can lead to serious consequences in multiple pregnancies [7]. According to the American College of Obstetricians and Gynecologists (ACOG), the definition of maternal hemorrhage is blood loss of 1000 ml or more in the first 24 hours after birth or blood loss accompanied by signs and symptoms of hypovolemia [8]. The most important reason responsible for the increased risk of PPH is that uterine overdistension increases the chance of uterine atony after delivery by affecting myometrial contractility. In addition, maternal blood volume and uterine blood flow are further increased in multiple pregnancies [9-10]. For these reasons, the risk of PPH in multiple pregnancies requires adequate preoperative preparation, correct management in the intraoperative period, careful follow-up and quick decision-making skills of anesthesiologists. We aimed to present our case, who had triplet pregnancy and developed PPH due to uterine atony during cesarean section, in the light of the literature.

Case Report

35-year-old (160 cm height, 80 kg) patient with monochorionic triamniotic triplet pregnancy and gestational age of 34 weeks and 2 days came to our hospital after amniotic fluid discharge, and cesarean section was planned. The patient's gravity and parity were: gravida 2, para 2, abortus 0 (G2 P2 A0). Prehistory showed Clexane® usage (enoxaparin sodium) due to

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deep vein thrombosis in the left leg, migraine, and an asymptomatic covid-19 infection at the 30th week of pregnancy. The patient whose blood group was 0 rH (+), had a hemoglobin of 10.7 g/dL and hematocrit of 32.4%. In the preoperative examination, it was assessed that the mallampati score was 3 and the American Society of Anesthesiologists (ASA) score was 2. The patient was conscious and her vital signs were stable. After briefing the patient with the necessary information and written informed consent was obtained, the patient was operated on after a 6-hour fasting period.

After being taken to the operating room and standard ECG, pulse oximetry, and noninvasive blood pressure monitoring, the patient's vital signs were measured as SpO2: 98 %, blood pressure: 140/80 mmHg, heart rate: 110 beats/min,respiratory rate (RR) 19 breaths/min, body temperature: 36.2° C. Prophylaxis for aspiration, which is standard preoperative practice for the pregnant, was applied. 0.9 % NaCl was infused through intravenously(IV) 10 mg metoclopramide, 50 mg ranitidine and a single dose of 1 gram (g) cefazolin were administered. Following skin antisepsis, 12.5 mg of hyperbaric bupivacaine (Bustesin®) was intrathecally administered with a 25G Quincke sharp-pointed spinal needle through the L3-4 interval. The patient was then quickly placed in the supine position and the operating table was tilted sideways to the left approximately 15° to reduce aortocaval pressure after the urinary catheter was inserted. Sensory block level was checked with bilateral pinprick test. After 5 minutes (min), the block level was T4 and a complete bilateral motor block had been developed. When hypotension occurred after spinal anesthesia, a total of 30 mg of IV ephedrine was administered to stabilize her hemodynamics. A 20 % decrease in mean arterial pressure was classified as hypotension. 5 minutes after surgical preparation and incision, the 1st baby, 2nd baby and 3rd baby were born alive, with 1. and 5. minute APGAR Scores: 9,10; 7,8; 9,10 respectively. Following the clamping of the umbilical cord, carbetocin (Pabal®) was administered as a 100 mcg/ml IV bolus. Despite the carbetocin and uterine massage, the uterus was observed to be atonic, and as the bleeding continued severely, a 14 G vascular access was established in addition to the existing 18 G vascular access and 500 ml of HES (6% Hydroxyethyl starch) was administered. First, 10 mg of vitamin K and 20 mg/kg of tranexamic acid IV bolus were administered. In the arterial blood gas, measurements were pH: 7.467, PaO2:158 mmHg, PaCO2:31mmHg, Hb:5.9 g/dL, Hct:18.5 %, Lactate: 3.2 mmol/L. Since Hb was 5.9 g/dL and the bleeding continued, intraoperative 2 Units (U) packed red blood cell (PRBC), 15 mL/kg Fresh Frozen Plasma (FFP), 1U apheresis platelet suspension, 1200 mL 5 % albumin, 4000 mL crystalloid replacement were performed. Fluids were warmed before administering and an electrical heater was used during the intraoperative period to achieve normothermia. The approximate amount of bleeding in the aspirator, surgical site and gauzes was 2500-3000 mL. Upon low fibrinogen, 2 U cryoprecipitate was administered. While the patient's blood pressure was around 90/60 mmHg, the highest blood pressure was 140/80 mmHg and the lowest was 60/40 mmHg. The incision of the patient who underwent cervical balloon tamponade by the obstetrician for bleeding control was closed and she was taken to the ward.

The patient’s bleeding continued 2 hours after the follow-up in the service with Hb: 4.5 g/dL, and was urgently operated (Figure 1). Standard ECG, pulse oximetry and non-invasive blood pressure monitoring were performed. The patient's consciousness was clouded, Glaskow Coma Score (GCS): 12, SpO2: 96 %, blood pressure: 90/45 mmHg, heart rate: 105 beat/min, body temperature was 35.8° C. After 3 minutes of 6lt/min preoxygenation, she was intubated and connected to the mechanical ventilator following rapid-series induction. Right internal jugular vein catheter was placed and invasive artery monitoring was performed. Central venous pressure was measured as 7 cmH2O. Noradrenaline infusion was commenced at a rate of 0.01 mcg/kg/min. The surgical team performed TAH BS. The patient, who received a warmed 4 U PRBC, 3 U FFP, 1 U platelet suspension, 500 cc HES, 2000 mL crystalloid, 2 gr tranexamic acid, replacement intraoperatively in total, had her blood pressure monitored between 110/60 mmHg and 90/50 mmHg. Later, the patient was extubated and transferred to the intensive care unit. The patient, who was kept under observation in the intensive care unit for 2 days, was transferred to the service at the end of the 2nd day. As the post-operative period was uneventful, she was discharged on the 7th postoperative day.

Discussion

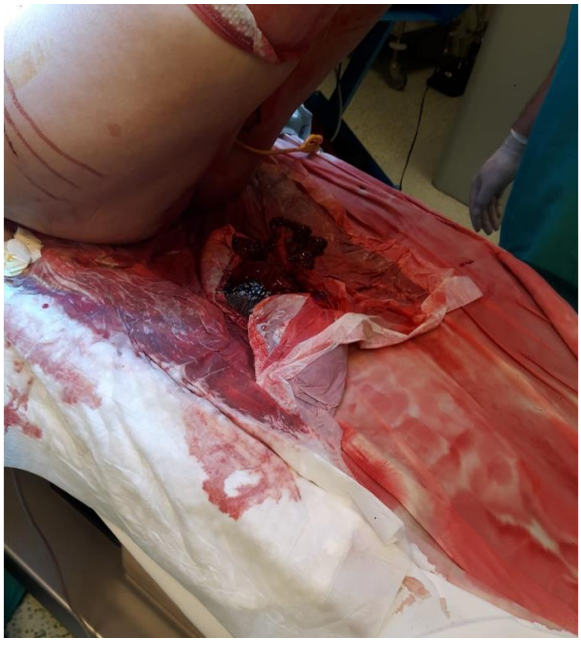
Survival rates due to maternal hemorrhage are gradually increasing, but strict surgical and medical hemostasis control, massive blood transfusions and in some cases hysterectomy may be required during the process [11-12]. One of the leading causes of massive obstetric hemorrhages, which are more common in multiple pregnancies, is uterine atony. Uterotonics such as oxytocin, ergometrine and prostaglandin (E1 and F2α) in pharmacological treatment, uterine artery embolization with surgical tamponade, surgical sutures and, if possible, interventional radiology may be considered in such cases. Despite all these, if the bleeding cannot be stopped, hysterectomy is inevitable. Anesthetic management of PPH is of utmost importance for an anesthesiologist. Things to consider for the management are close hemodynamic monitoring (invasive artery and monitorization, central venous catheterization and vasopressor application when necessary) and adequate fluid, blood and blood product replacement, with the purpose of providing effective intravascular volume, optimizing cardiac output, and making tissue oxygenation and perfusion adequate. One must bear in

mind the risk of edema in the upper airways and lungs due to high amounts of crystalloid and blood transfusion. Due to massive volume resuscitation due to severe bleeding, coagulation factors decrease and dilutional coagulopathy may occur. A fibrinogen value of 1.5<g/L is defined as hypofibrinogenemia, which is associated with coagulopathy and increased bleeding risk. A fibrinogen level <2g/L is associated with a risk of severe PPH. First choice in its treatment is fibrinogen concentrate, the second choice is cryoprecipitate [13]. In addition, iv tranexamic acid and iv uterotonic agents should be used in the treatment of PPH; Correction of acid-base, fluid-electrolyte disorders, ensuring adequate urine output and providing normothermia should be our main goals [11].

In multiple pregnancies, although regional anesthesia is not always the first choice in multiple pregnancies, in the absence of active bleeding and stable hemodynamics, single-dose spinal anesthesia can be safely applied due to the urgency. However, in case of deterioration of maternal hemodynamics or acute fetal distress, general anesthesia may be preferred for a second operation during the operation or in the postpartum period.

When PPH occurs, anesthetists and obstetricians make use of and apply protocols for major bleeding and coagulopathies and algorithms swiftly according to etiology with a multidisciplinary approach for optimal management. The participation of the anesthesia team in PPH is not only limited to the emergency intrapartum but also adequate anesthetic/analgesic plans in the postpartum period will increase the safety and recovery of the mother.

Figure 1- Hemorrhage of the patient



Conclusion

In conclusion, we think that for similar complications that may occur in these patients, morbidity and mortality can be reduced by multidisciplinary evaluation, rapid action, close follow-up and correct management in the perioperative period.

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