International Journal of Medical Anesthesiology

E-ISSN: 2664-3774
P-ISSN: 2664-3766
www.anesthesiologypaper.com
IJMA 2023; 6(3): 120-122
Received: 01-07-2023
Accepted: 05-08-2023

Dr. Prathibha Santosh
Specialist Anesthesiology, Department of Anaesthesia, NMC Royal Women's Hospital, Abu Dhabi, UAE

Amera Shweita
Department of Anaesthesia, NMC Royal Women's Hospital, Abu Dhabi, UAE

Marwa Mamdouh
Department of Anaesthesia, NMC Royal Women's Hospital, Abu Dhabi, UAE

Corresponding Author:
Dr. Prathibha Santosh
Specialist Anesthesiology, Department of Anaesthesia, NMC Royal Women's Hospital, Abu Dhabi, UAE

Anaesthetic management of atonic postpartum haemorrhage secondary to trauma during normal vaginal delivery: A case report

Dr. Prathibha Santosh, Amera Shweita and Marwa Mamdouh

DOI: https://doi.org/10.33545/26643766.2023.v6.i3b.423

Abstract
PPH is a leading cause of maternal mortality which has several aetiologies. Effective management including resuscitation, hemostasis, and identification and treatment of the cause in these cases is important. This case reports a parturient patient G4P3L3 40 weeks and 1 day gestation who suffered from PPH after normal vaginal delivery. On exploration an uncommon right broad ligament hematoma was detected which was drained, ligating the hypogastric artery. A hysterectomy was performed. During the procedure general anesthesia with ketamine was administered. Haemostasis was maintained by transfusing 2 units of packed red blood cells and 1 unit of fresh frozen plasma (FFP). Inj Fibrinogen 2 grams and Inj. Tranexamic acid 1 gram was infused intravenously. In total, 9 units of packed RBCs, 6 units of FFP, 4 units of platelets, and 2 liters of crystalloids were transfused during the entire procedure. 10 ml of 10% calcium gluconate was also given after every 3 units of packed RBC transfusion. The patient was weaned off the ventilator after stabilizing the vitals and discharged 5 days later.

Keywords: PPH, vaginal delivery, anaesthesia, case report

Introduction
The World Health Organization (WHO), defines postpartum hemorrhage (PPH) as blood loss of 500 ml or more within 24 hours following birth. Severe PPH is defined as blood loss of more than or equal to 1000 ml within 24 hours after birth. If PPH occurs within the first 24 hours it is termed primary PPH any abnormal or excessive bleeding after 24 hours till 12 weeks postnatally is termed secondary pph [1].

Obstetric hemorrhage is a common complication following childbirth. It is also the leading cause of maternal mortality and accounts for 27.1% of maternal deaths worldwide and 19.9% in India [2]. Out of all obstetric hemorrhages, postpartum hemorrhage (PPH) accounts for 72% of maternal mortality and hence it becomes a major public health issue. 3-10% of deliveries experience postpartum hemorrhage. Globally PPH rates are increasing remarkably [3, 4].

PPH has several potential aetiologies. It may result from uterine atony which is the failure of the uterus to contract adequately, trauma to the genital tract including lacerations of the vagina or cervix, uterine rupture, bleeding disorders, or retained placental tissue [1]. Among these causes uterine atony accounts for more than 80% of the PPH cases while 20% of all primary PPH is attributed to trauma [4, 5].

Effective management of PPH is of utmost importance if maternal mortality is to be curbed. It needs various multidisciplinary and simultaneous interventions. The main focus of treatment and management of PPH cases is resuscitation of the patient while identifying and treating the specific cause [3]. Depending on the cause various modalities like uterine massage, uterotonic agents, uterine reversion, use of coagulating agents, etc. can be used for the treatment of PPH [6]. Here we present the management of a case of normal vaginal delivery that ended up with atonic PPH secondary to trauma.

Case presentation
A parturient patient G4P3L3 40 weeks and 1 day gestation was admitted at the NMC Royal Women's Hospital in December 2019 for induction of labour. The patient was 31 years old. She presented with an obstetric history of previous uneventful normal vaginal deliveries.

A surgical history of cervical myomectomy was also recorded. On admission the cervix was dilated to 1.5 cm, the fetus showed cephalic presentation, and was in the longitudinal lie position. Labor was induced and was augmented with process and syntocin infusion. Labor pain was managed by a paracervical block by the surgeon. The male baby was delivered via spontaneous vaginal delivery. Right, mediolateral episiotomy was performed during delivery. The blood loss reported was 1000 ml.

Profuse vaginal bleeding was noted while suturing the episiotomy. Atonic PPH protocol was implemented. The patient was shifted from the labor room to the operation theatre (OT) for vaginal exploration which was performed under general anesthesia. Rapid sequence induction was done, the patient was intubated and the airway was secured.

2 large bore IV cannulas were placed. The blood sample was sent for a complete blood count and coagulation profile. After vaginal exploration, the vaginal and cervical laceration was sutured, and vaginal packing was done by the surgeon. Abdominal ultrasound was done to rule out any retained placental products and the uterus was contracted. Blood loss of 2000 ml was observed at the end of this procedure and 2 units of crossmatched blood was transfused. At the end of the exploration, it was confirmed that there was no vaginal bleeding and that the uterus was well contracted. The patient was then extubated and shifted to the recovery room with stable vital signs.

In the recovery room, within 30 minutes the patient had severe hypotension (BP-80/40mmof Hg, HR-110/min). A vaginal examination showed profuse bleeding and the vaginal pack was completely soaked with blood. The patient was shifted back to the OT for re-exploration of the vagina and uterus. During the 2nd exploration, vasopressor support was started with Phenylephrine infusion and Noradrenaline infusion. A massive blood transfusion protocol was activated and implemented. 2 units of packed red blood cells and 1 unit of fresh frozen plasma (FFP) were transfused. Inj Fibrinogen 2 grams and Inj. Tranexamic acid 1 gram infused intravenously.

With this ongoing transfusion, the patient was administered general anesthesia with ketamine via rapid sequence induction and was then intubated. The left radial arterial line was secured and right internal jugular vein cannulation was done. Blood samples were sent for the following investigations- Arterial blood gas analysis (ABG), complete blood count (CBC), serum electrolytes, coagulation profile, liver function tests, and renal function tests. The electrocardiogram, non-invasive as well as invasive blood pressure, peripheral oxygen saturation (SpO2), end-tidal carbon dioxide (EtCO2), central venous pressure, urine output, temperature, and rotational thromboelastometry results were constantly monitored.

Bakri balloon was inserted by the surgeon but the uterus remained atonic. Atonic PPH protocol was thus continued. The second dose of injectable fibrinogen 2 grams was intravenously administered slowly. The vitals remained unstable hence haemodynamics was maintained with blood transfusion, FFP, and platelet transfusion. The patient was put on inotropes. All investigation reports were followed up sequentially and corrected accordingly. Metabolic acidosis was also corrected.

Finally, the surgeons decided to perform an exploratory laparotomy due to the hemodynamic instability of the patient and ongoing hemorrhage. Intraoperative findings were that of a right broad ligament hematoma. It was a large hematoma reaching the iliac artery bifurcation and extending into the utero-vesical space. The vascular surgeon drained 1000 ml of clots from the broad ligament hematoma. The right hypogastric artery was ligated and hysterectomy was done. Homeostasis is maintained at the end of surgery. Total blood loss at the end of the surgery was 5000 ml. The urine output was 800 ml, the latest hemoglobin count was 8.5 gm/dl, and the platelet count was 140,000 cells/cumm. In total, 9 units of packed RBCs, 6 units of FFP 4 units of platelets, and 2 litres of crystalloids were transfused during this procedure.10 ml of 10% calcium gluconate was given after every 3 units of packed RBC's transfusion.

The patient was shifted to the ICU for further management. The patient was managed in the ICU and was weaned from a mechanical ventilator and extubated the next day. The patient's vital signs were stable. She was discharged home after 5 days.

Discussion

As soon as PPH is diagnosed, an anesthetist should initiate an appropriate resuscitation protocol, take necessary steps to protect the patient against hypothermia, establish secure venous access, and take initial blood samples. Ensuring that the patient is under optimal safety conditions for the surgeon to perform other diagnostic and surgical procedures is the responsibility of the anesthetist [7].

Treatment of PPH primarily depends on the identification of the underlying cause but the importance of resuscitation cannot be underestimated. An optimal anesthetic approach should be followed. To ensure continuous perfusion to the vital body organs it is important to maintain hemodynamic stability. Intravenous access should be in ample amounts. Cumulative blood loss should be directly assessed. Protocols for releasing blood products and massive transfusion should be initiated at early stages [3].

Ideally, wide-bore IV access and warming devices are used to ensure normothermia. Blood loss after delivery can be limited with permissive resuscitation with mean arterial BP of 50-60 mmHg. The PT and PTT can be prolonged by increasing IV fluids which leads to decreased blood concentration [8]. In the present case too wide bore IV cannulas were used and massive transfusion protocols with packed red cells and FFP were initiated at the earliest with large amounts of IV fluids.

General anesthesia (GA) is the preferred technique for cases with massive transfusions. Induction of GA can be done with 1.5-2 mg/kg of propofol or 0.2-0.3 mg/kg of etomidate but as they can cause some vasodilation and hypotension, 0.5-1 mg/kg of ketamine is better used due to its vasoconstriction properties. The decision about the anesthetic technique is taken after considering the blood loss, the definitive treatment modality, the availability of the team of anesthetists, and the anticipated risk of airway difficulties [8]. General anesthesia in this case too, was administered with ketamine via rapid sequence induction.

In PPH cases anti-fibrinolytic agents like tranexamic acid, 1 g over 10 min IV and within 3 h of delivery, have a wide therapeutic index [8]. On the other hand it is observed that 2-4 g of lyophilized fibrinogen concentrate helps to maintain the fibrinogen levels in the blood to > 2 g/L and the fibrinogen replacement is usually done using FFP, cryoprecipitate, or human fibrinogen concentrate options [9,

[10]. Similarly, in this case, 1 gram of Tranexamic acid was injected intravenously to achieve anti-fibrinolytic properties. Here 2 grams of fibrinogen was injected intravenously to maintain the blood levels of the same along with FFP.

Broad ligament hematoma formation after labor is a rare case. Management of broad ligament hematoma can be either conservative or surgical depending on the hemodynamic status, size, and rate of hematoma expansion. Key steps in the management are resuscitation, volume replacement, and surgical exploration [11-13]. As in the present case the hematoma was large and was reaching the iliac artery bifurcation extending in the utero-vesical space conservative management was not indicated.

Conclusion

Post-partum hemorrhage is a common obstetric complication. One of the major aetiologies of PPH is uterine atony followed by trauma. Broad ligament hematoma is not a common presentation following normal vaginal delivery although with episiotomy. Treatment of PPH needs a multidisciplinary approach and can either be conservative or may require resuscitation and laparotomy. Optimal hemostatic resuscitation with profound anesthesia and balanced transfusion is pivotal in the treatment of PPH. Early recognition and management of cause as well as early calling for help also plays an important role in favourable outcome. Resuscitation can be initiated by securing venous access with a large bore cannula, administering resuscitation fluids, and oxygen supplementation as well and closely monitoring vital signs and urine outputs.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Russell RT. WHO guidelines for the management of postpartum haemorrhage and retained placenta. Hum Fertil. 2011 Jun;14(2):129-129.
2. Gora K, Depan A, Yadav K, Benwal D. Causes and management of post-partum hemorrhage at tertiary care center, Rajasthan, India. Int J Reprod Contracept Obstet Gynecol. 2019 May 28;8(6):2425-8.
3. Wormer KC, Jamil RT, Bryant SB. Acute Postpartum Hemorrhage. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 [cited 2023 Aug 22]. Available from: http://www.ncbi.nlm.nih.gov/books/NBK499988/
4. Almutairi WM. Incidences of Atonic Postpartum Hemorrhage and Related Risk Factors at a Tertiary Hospital in Saudi Arabia. Nurs Rep. 2020 Dec 16;10(2):164-71.
5. Shantha K, PPH Prevention and Management: Updated PPH Guidelines [Report]. 2022. [cited 2023 Aug 22]. Available from: https://www.fogsi.org/wp-content/uploads/tog/pph-prevention-and-management-updated-sept-2022.pdf
6. Anderson JM, Etches D. Prevention and Management of Postpartum Hemorrhage. Am Fam Physician. 2007 Mar 15;75(6):875-82.
7. Pohan D. Anesthetic Management of Postpartum Hemorrhage. Atlantis Press; c2021. p. 99-102.
8. Samir GM. Updates in the perioperative management of postpartum hemorrhage. Ain-Shams J Anesthesiol. 2023 Dec;15(1):1-6.
9. Spahn DR, Bouillon B, Cerny V, Duranteau J, Filipescu D, Hunt BJ, *et al*. The European guideline on management of major bleeding and coagulopathy following trauma: fifth edition. Crit Care. 2019 Mar 27;23(1):98.
10. Ekelund K, Hanke G, Stensballe J, Wikkelsøe A, Albrechtsen CK, Afshari A. Hemostatic resuscitation in postpartum hemorrhage – a supplement to surgery. Acta Obstet Gynecol Scand. 2015;94(7):680-92.
11. Varvoutis M, Nguyen NTT, Grotegut C. Spontaneous Broad Ligament Hematoma after Vaginal Delivery Requiring Hysterectomy. AJP Rep. 2021 Jan;11(1):e34-7.
12. Kovo M, Eshed I, Malinger G. Broad ligament hematoma following a normal vaginal delivery. Gynecol Surg. 2006 Jun;3(2):138-40.
13. Adow MT, Gechu NG, Eshete DT, Siraneh AG. Broad ligament hematoma after normal vaginal delivery: a rare case scenario. Int J Sci Rep. 2021 Jun 22;7(7):366-8.

How to Cite This Article

Santosh P, Shweita A, Mamdouh M. Anaesthetic management of atonic postpartum haemorrhage secondary to trauma during normal vaginal delivery: A case report. International Journal of Medical Anesthesiology. 2023;6(3):120-122.