

# Perioperative management of a parturient with Bombay phenotype and placenta previa

Emmarie Myers, MD, Tymoteusz Kajstura, MD, PhD, Jamie Murphy, MD, Scott Mittman, MD, PhD, Steven Frank, MD, Elizabeth P. Crowe, MD, PhD. Johns Hopkins University



- **Background:**

- Bombay phenotype ( $O_h$ ) is exceedingly rare blood type
  - Incidence: 1 in 10,000 in India and 1 in 1,000,000 in Europe<sup>1</sup>
- Individuals lack an H antigen on red blood cells (RBCs) and produce an anti-H antibody
- Require transfusions of  $O_h$  RBCs or risk severe, possibly fatal, immediate or delayed hemolytic transfusion reaction<sup>2</sup>
- Management is complicated as  $O_h$  RBCs are limited resource and not readily available

1. Krigstein M, Cromer N. *Transfusion*. 2022;62(1):247-251.
2. Paudyal P, Gurung G, Adhikari A, Maskey S, Baral J. *Case Rep Obstet Gynecol*. 2020;2020:8850500.

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## Case:

- 36-year-old G1P0 female presented @ 36w4d with pregnancy complicated by placenta previa → scheduled for 37w2d
- Outside labs → positive antibody screen
- Day prior to scheduled surgery, a type and screen identified O<sub>h</sub>
- American Red Cross and American Rare Donor program → two frozen O<sub>h</sub> RBC located & delivery postponed pending arrival of blood
- Hematology, Transfusion Medicine, and the Bloodless Medicine teams consulted
- Intraoperative planning: utilize cell salvage, early tranexamic acid, all available uterotonics, and recombinant factor VII if severe hemorrhage
  - consented for **glutaraldehyde-polymerized bovine hemoglobin**, HBOC-201, in the event of life-threatening bleed
  - Blood to remain frozen given scarcity (3-4 hours to thaw)
- **Delivery:**
  - Uncomplicated spinal anesthetic
  - 1 L albumin and 700 mL crystalloid; Quantitative blood loss was 1175 mL
  - Oxytocin was the only uterotonic given; cell salvage collected 400 ml (not reach sufficient volume for return)
- Hemoglobin was 12.6 pre-operatively and 9.9 g/dL on post-operative day 1

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- **Learning Points:**

- Combination of an extremely rare blood type and high hemorrhage risk requires pre-operative planning and an understanding of potential techniques to minimize blood loss
- ARDP can help locate blood, but O<sub>h</sub> RBC units unlikely to be readily available if unanticipated admission
- Blood was not thawed given the scarcity of O<sub>h</sub> units and expiration within 24 hours once thawed
  - Newborn would also need O<sub>h</sub> blood if transfusion required prior to T&S
- Prior experience with the Bloodless Medicine team, typically consulted for Jehovah's Witness parturients, allowed for plans to avoid transfusion
- Autologous donation and cryopreservation may be a viable option to ensure blood availability for future pregnancies