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Patient blood management to minimize transfusions during the postpartum period

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Postpartum hemorrhage (PPH) is still the most common cause of maternal mortality and accounts for 27% of postpartum deaths every year worldwide.

Early detection and the right treatment are crucial to reduce morbimortality associated to this condition.

A distinction can be made between primary PPH when bleeding occurs within 24 hours after the delivery, and secondary PPH when bleeding occurs after 24 hours to 12 weeks after delivery.

Early detection of PPH can be complex because the clinical signs are often latent and it is not always easy to quantify blood losses in this scenario. Therefore, bearing in mind risk factors associated with PPH speeds up management.

Risk factors for postpartum hemorrhage
Previous retained placenta or postpartum hemorrhage
Maternal hemoglobin level below 8.5 g/dL at onset of labor
BMI greater than 35 kg/m^2
Grand multiparity (parity 4 or more)
Antepartum hemorrhage
Overdistention of the uterus (e.g., multiple pregnancy, polyhydramnios or macrosomia)
Existing uterine abnormalities
Low-lying placenta
Induction
Prolonged first, second or third stage of labor
Oxytocin use
Precipitate labor
Operative birth or cesarean section

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Even though transfusion is an essential tool in the management of PPH, regardless of its etiology, excessive or unnecessary transfusion leads to unwanted effects. This is why the concept of Patient Blood Management (PBM), with its three pillars, can be applied to postpartum hemorrhage in the following way:

1st pillar: prenatal anemia prediction and correction.

40% of pregnant women suffer from anemia caused by an iron deficiency, and so anemia screening in all pregnant women and oral or parenteral iron supplementation correspond to the first pillar of PBM in this patient group. Moreover, in cases not responding to parenteral iron therapy, the use of erythropoiesis-stimulating agents may be considered. Red blood cell transfusion should be reserved to hemoglobin values under 6 mg/dL.

2nd pillar: hemorrhage prevention and reduction during delivery.

During the third phase of delivery, some known instrumental maneuvers may be used to prevent PPH, such as umbilical cord traction or uterine massage.

Furthermore, uterotonic drugs are universally used—uterine atony is still the most prevalent cause of PPH,—such as oxytocine, ergometrine, misoprostol or—the most expensive alternative,—carbetocin.

Tranexamic acid given within three hours of the bleeding has shown a high therapeutic efficacy to control the bleeding (0.5-1 gram intravenous dose).

Intrauterine tamponade with Bakri balloon, therapeutic angiography, or compressive vascular suture are instrumental alternatives in this 2nd pillar.

As a last resort, hysterectomy may be considered.

The optimal time for transfusion in PPH is not well defined, but if justified by the clinical situation, massive hemorrhage protocols should be activated.

It is fundamental to remember that fluid replacement and transfusion should be performed with a fluid heater.

Acidosis correction and early administration of fibrinogen are additional treatment measures.

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3rd pillar: limiting the use of transfusions and optimizing postpartum anemia treatment.

In the postpartum period, the most frequent causes of hemorrhage are the retention of placenta remains and endometritis. Both conditions have specific treatments in gynecological protocols.

Approximately 50% of pregnant women present postpartum anemia (not uniformly defined as Hb <10 gr/dL 24 hours after delivery, < 11 g/dL in the week after or <12 g/dL after 8 weeks).

Oral iron supplementation is recommended in the puerperal period, and parenteral supplementation in

cases of moderate or severe anemia.

Red blood transfusion should be restricted to cases where Hb is below 6 g/dL, or values of 7-9 gr/dL together with anemia symptoms.

In conclusion, puerperal hemorrhage is a condition for which PBM philosophy is fully fitting, leading to a more responsible management of this patient group and avoiding excessive or unnecessary transfusions, as well as the collateral damages it entails.