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Give a uterotonic routinely during the third stage of labor

Active management after delivery lowers the risk of postpartum hemorrhage and its complications

Postpartum hemorrhage is a major complication of delivery. It is associated with an increased risk of transfusion, hysterectomy, admission to the intensive care unit, and maternal death.

What can we do to reduce the magnitude of this problem? For one, **including a uterotonic agent in active management of the third stage of labor** reduces the rate of postpartum hemorrhage. This practice should be routine in birth centers.

Critical time: Delivery to separation and expulsion of placenta

In the third stage of labor, and in the interval immediately following, the main complication is maternal hemorrhage.

Active management of the third stage typically involves administration of a uterotonic agent and, in many clinicians' practice, controlled traction on the cord to assist in separation and expulsion of the placenta.

Expectant management, on the other hand, typically means allowing spontaneous delivery of the placenta without a uterotonic agent or traction on the cord.

Routine administration of a uterotonic, during delivery of the anterior shoulder of the newborn or immediately after expulsion of the placenta, has beneficial effects. This has been demonstrated in numerous clinical trials.¹⁻⁴ Here are the results of 2 of those trials.

STUDY 1 Less bleeding with IV bolus of oxytocin

- **Blood loss was less** in the oxytocin group
- **The percentage of significant blood loss was higher** in the placebo group
- **Risk of maternal hemorrhage increased** with fetal size

Nordstrom and colleagues randomized 1,000 women undergoing vaginal delivery to receive 10 units of oxytocin or placebo (1 mL of 0.9% saline) as an intravenous (IV) bolus immediately after delivery of the newborn.¹ The cord was clamped some minutes after delivery. Traction was not applied to the cord. Manual placental removal was undertaken if the placenta did not deliver within 60 minutes after delivery.

The randomization process worked well: No significant differences were noted between groups in regard to maternal age, parity, gestational age, oxytocin augmentation, operative vaginal delivery, or birth weight.

Mean blood loss was less in the oxytocin group (409 mL) than in the saline group (527 mL) ($P < .001$). In the saline group, more women (36%) had blood loss greater than 500 mL than did women in the oxytocin group (20%).

Fetal weight over 4,500 g was associated with an increased risk of postpartum hemorrhage in Nordstrom's study. Among women who had a newborn more than 4,500 g, postpartum hemorrhage

FAST TRACK

In clinical trials, oxytocin during delivery of the anterior shoulder or immediately after expulsion of the placenta meant less postpartum hemorrhage

developed in 42% of the saline group and in 10% of the oxytocin group.

The researchers estimated that 16 injections of oxytocin were needed to prevent one case of blood loss over 800 mL. Compared with placebo, oxytocin was associated with a 40% reduction in the risk of having a hemoglobin concentration under 10 g/dL on postpartum day 2. No difference was noted between the groups in the number of women transfused (approximately 1% in both) or in the mean time from delivery to placental expulsion (approximately 15 minutes). Retained placenta occurred in 3.5% of women who received oxytocin and in 2.3% of women who received saline—a statistically insignificant difference.

The investigators concluded that administration of oxytocin in the third stage of labor should be routine practice.

STUDY 2 Similar benefit to oxytocin found—plus other advantages

- **Significant blood loss in the no-treatment group** was triple that of the oxytocin group
- **The third stage of labor was shorter** in the oxytocin group
- **Quicker placental separation was noted** overall in the oxytocin group

Pierre and colleagues randomized 1,000 women who delivered vaginally to receive 5 units of oxytocin as an IV bolus at the time of delivery of the anterior shoulder or no injection (control group). The cord was clamped about 30 seconds after delivery of the newborn in both groups. Gentle uterine pressure and cord traction were permitted in both groups, and was the common practice of the participating clinicians.

Postpartum blood loss was significantly greater in the group that did not receive oxytocin. Blood loss greater than 1,000 mL, for example, occurred in 4.4% of the control group and 1.4% of the oxytocin group ($P<.01$). In addition, the third stage of labor was shorter in the group that received oxytocin. The

percentage of deliveries in which the placenta did not separate within 15 minutes after delivery was 24.5% among controls and 13.1% in the oxytocin group. There was no difference between groups in the rate of retained placenta.

By which route and at what dosage, then?

The most common oxytocin regimens following delivery are

- 10 to 20 units in 1 L of fluid, administered at 100–150 mL/h by continuous infusion
- 5 to 10 units in an IV bolus
- 10 units as an intramuscular injection.

The 2 trials summarized above both used an IV bolus of oxytocin. In the United States, however, common practice is to administer a continuous infusion after delivery.

In 1 trial, Davies and colleagues compared methods of administration by randomizing 201 women postpartum to receive an IV bolus of 10 units of oxytocin or continuous infusion of 10 units of oxytocin in 500 mL of saline.⁵ Women treated with the IV bolus had, on average, less blood loss (358 mL) than those treated with IV infusion (424 mL) ($P=.029$).

In the Davies study, bolus oxytocin was not associated with adverse hemodynamic effects in the mother. Additional studies are warranted to clarify whether the benefit of an IV bolus is potentially superior to that of continuous infusion.

Laissez-faire isn't acceptable

Some clinicians exhibit an interesting disconnect between knowledge and practice when they discuss how they manage the third stage of labor. Almost all acknowledge that clinical trials demonstrate that active management of the third stage of labor reduces maternal blood loss. In practice, however, they report a laissez-faire approach to the third stage: They either administer a uterotonic only if bleeding is excessive or do not have a

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Bolus oxytocin hasn't been associated with adverse hemodynamic effects in the mother



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standardized approach to administering oxytocin postpartum.

We continue to work on “truing-up” patterns of practice in light of strong clinical evidence. To that end, it's time to uniformly adopt a policy of administering oxytocin during the third stage of labor.

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INSTANT POLL

What is **your** preference in practice?

Which statement best describes how you use a uterotonic to manage the third stage of labor?

- I administer 5–10 U of oxytocin as an IV bolus—routinely
- I administer a solution of 20 U of oxytocin in 1,000 mL of fluid as an IV drip—routinely
- I administer a uterotonic only if an oxytocin solution was used before delivery
- I don't administer a uterotonic routinely after delivery

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