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CORR Insights®: What Should Define Preoperative Anemia in Primary THA?

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Where Are We Now?

Blood conservation is an essential aspect of THA. Transfusions have risks, including the transmission of blood-borne infections, transfusion-related reactions, transfusion-related acute lung injury, circulatory overload, immune-mediated transfusion effects, and periprosthetic joint infections [1].

This CORR Insights® is a commentary on the article “What Should Define Preoperative Anemia in Primary THA?” by Klement and colleagues available at: DOI: 10.1007/s11999-017-5469-4.

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The routine use of tranexamic acid (TXA) has become common at most institutions since it is safe, inexpensive, easy to administer, and effective at minimizing perioperative blood transfusion [3–6, 8, 9]. Intravenous (IV) TXA can be given in several different ways. The Mayo Clinic protocol calls for administering TXA once prior to incision (1 g intravenous in 50 mL of normal saline) and once during wound closure [4]. In light of TXA’s widespread use, historical hemoglobin (Hgb) cutoffs to predict the risk of a postoperative blood transfusion are dated, and contemporary data are required.

In the current study, Klement and colleagues examined TXA use in 558 primary THAs in a contemporary practice to determine hemoglobin cutoffs associated with blood transfusions, as well as risk factors. The authors found that after accounting for confounding variables (such as

age, sex, American Society of Anesthesiologists score, IV TXA use, and preoperative Hgb), patients with lower preoperative Hgb, female patients, and patients unable to receive IV TXA were at the highest risk for a blood transfusion. Moreover, a preoperative Hgb cutoff value of 12.6 g/dL (> 12.5 g/dL for females and > 13.5 g/dL for males) was associated with transfusion.

Where Do We Need To Go?

While substantial advances have been made regarding blood conservation before, during, and after primary THA, gaps in our knowledge remain. Foremost, the ideal dosing and route of administration of TXA remains unknown. Secondly, we need to learn more about how other surgical and anesthetic advances—such as periarthicular injections with epinephrine [2]—may influence blood loss. Finally, we need to tailor our preoperative testing so as to minimize unnecessary investigations. For instance, do patients with preoperative Hgb > 12.6 g/dL (> 12.5 g/dL for females and > 13.5 g/dL for males) and no

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contraindications to IV TXA really need a type and screen before surgery?

How Do We Get There?

While IV TXA has truly been a game-changer for primary THA, additional Level 1 randomized clinical trials studying various formulations (IV, oral, and/or topical) and doses are needed before definitive guidance can be appreciated. This includes the possibility of combined formulations (ie, IV TXA and topical TXA in the same procedure).

For periarticular injections, additional analyses of formulations with and without local vasoconstrictors such as epinephrine will be beneficial. Moreover, in patients with a Hgb > 12.6 g/dL (> 12.5 g/dL for females and > 13.5 g/dL for males) who can tolerate IV TXA, routine and liberal use of type and screens can be minimized. Finally, what I would characterize as reflexive transfusion protocols (such as those that use a transfusion trigger of 8 g/dL) need to change. It seems both safer and more pragmatic to assess patients individually; many patients who have no cardiac risk factors can tolerate more-severe postoperative anemia [7] as long as they remain asymptomatic. Surgeons must recognize that many clinical symptoms

historically associated with acute-blood-loss anemia are not related to red blood cells, but rather to volume depletion [7]. Therefore, first-line treatment of these symptoms should focus on fluid resuscitation with crystalloids to restore intravascular volume [7]. Only after adequate volume resuscitation should allogenic blood transfusions be considered in the setting of continued patient symptoms.

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