



ARTICLE OF THE MONTH

Intraoperative Tranexamic Acid Use in Major Spine Surgery in Adults: A Multicentre, Randomized, Placebo-controlled Trial[†]

Colomina MJ, Koo M, Basora M, Pizones J, Mora L, Bagó J; Handling editor: H. C Hemmings Jr.
Br J Anaesth. 2017 Mar 1;118(3):380-390. doi: 10.1093/bja/aew434.

Welcome to the May 2017 installment of the SNACC Article of the Month. Tony Absalom and Marko Sahinovic from the Netherlands have chosen to discuss the article mentioned above. They highlight the established role of tranexamic acid, but also the unknowns we still face.

Anthony (Tony) Absalom studied medicine at the University of Cape Town, South Africa, and underwent specialist training in East Anglia and Scotland in the UK. He is currently professor of anesthesiology at the University Medical Center Groningen, Groningen University, Netherlands. For several years, his clinical interests have been procedural sedation, anesthesia for neurosurgery, and intravenous anesthesia techniques. His research interests are mostly in the domains of pharmacology and neuroscience. He is an editor of the *British Journal of Anaesthesia*, president of the Society for Intravenous Anaesthesia, chairman of the neuroanaesthesia section of the Dutch Association of Anaesthetists, and is currently chair of the general anaesthesia scientific sub-committee of the European Society of Anaesthesiology.

Marko Sahinovic is an anesthesia consultant at the University Medical Center Groningen, Groningen University, Netherlands. He recently finished his specialist training and achieved his PhD. His research interests are in the domains of the pharmacology of anesthetics and monitoring of the effect of hypnotic/analgesic drug dosages.

As always we encourage our readers to tell us what they think by joining us on the SNACC [LinkedIn](#) feed, the [Twitter](#) feed or on [Facebook](#).

~ Nina Schloemerkerper, MD; Oana Maties, MD and Adrian Pichurko, MD

Commentary

Anthony Absalom, MD and Marko Sahinovic, MD

Tranexamic acid (TXA) is an antifibrinolytic drug that is well established in current clinical practice, as several studies have confirmed its efficacy in reducing blood loss and transfusion requirements in trauma, cardiac, orthopedic and urologic surgery. However, its role in major spinal surgery is less well established. A few studies have tried to address this, but their small sample size, varying methodology and drug dose regimens have led to conflicting and divergent results.

In the current study, the authors conducted a rigorously executed, multicenter, randomized, placebo-controlled trial to investigate the role of TXA in spinal surgery.¹ They randomized 96 patients undergoing posterior instrumented spine surgery involving more than three levels to treatment with TXA (10 mg kg⁻¹ bolus followed by a 2 mg kg h⁻¹ infusion) or placebo. The primary outcome measure was the number of blood units transfused. The secondary outcome was the total volume of intraoperative and perioperative blood loss. TXA did not reduce the number of blood units transfused, but did significantly decrease total intraoperative and perioperative blood losses.

This study is not only significant because it further establishes the role of TXA in the treatment of patients with major perioperative blood as an antifibrinolytic agent, but also because it demonstrates our lack of understanding of the pharmacology of TXA. As Goobie² states in the accompanying editorial in the *British Journal of Anaesthesia*, there are still a number of questions that need answering concerning the use of TXA in clinical practice. Because of our lack of understanding of the pharmacokinetics and pharmacodynamics of TXA, the optimal timing, drug dose regimens, and drug effect measurements are not yet known. Studies into the effectiveness of TXA have used different doses and drug administration regimens. Some of the studies have demonstrated a reduction in allogenic blood transfusion requirements with higher doses, but this has sometimes come at the cost of an increased risk of seizures. The current study involved a rather conservative TXA dose, which may explain in part, why they were unable to demonstrate reduced perioperative blood transfusion requirements.

The pharmacology of TXA must be investigated in further studies. A better understanding of dose-relationships will inform choices of doses that provide optimal plasma drug concentrations with an acceptable balance between desired clinical effects (inhibition of fibrinolysis) and unwanted side effects (such as seizures).

References:

1. Colomina MJ, Koo M, Basora M, Pizones J, Mora L, Bagó J. Intraoperative tranexamic acid use in major spine surgery in adults: a multicentre, randomized, placebo-controlled trial[†]. *BJA Br J Anaesth* 2017; **118**: 380–90.
2. Goobie SM. Tranexamic acid: still far to go. *BJA Br J Anaesth* 2017; **118**: 293–5.