Clin Orthop Relat Res (2017) 475:1997–1998 / DOI 10.1007/s11999-017-5322-9

Clinical Orthopaedics and Related Research®
A Publication of The Association of Bone and Joint Surgeons®

Published online: 23 March 2017

CORR Insights

CORR Insights®: What is the Ideal Route of Administration of Tranexamic Acid in TKA? A Randomized Controlled Trial

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Where Are We Now?

In their current study, Lee and colleagues determine the best route for administering tranexamic acid (TXA) for patients undergoing unilateral total knee replacement. The authors found that intraarticular administration (IA) by itself was as effective as combined IA and intravenous administration (IV) in reducing blood loss during the five postoperative days of observation. Although TXA has been shown to be effective in reducing blood loss [2], the ideal route of administration is still debated. The current study provides strong evidence that IA can be relied upon without the need for IV dosing.

The adoption of TXA as a blood-preserving tactic for total knee replacement is widely considered one of the important advances of the last decade. There is no question that TXA is effective in reducing blood loss and the need for transfusion following unilateral TKR. It also is considered safe. To date, there is no evidence that TXA increases the risk of any complications following total knee replacement. Finally, as confirmed in this study, there is strong evidence that IA, at the time of wound closure, is as effective as IV administration regardless of the dosage or timing of IV administration [1, 2].

Where Do We Need To Go?

It is hard to argue against the universal adoption of TXA in total knee replacement except in patients with ischemic heart disease, cerebral vascular disease, chronic renal failure, or coagulation disorders. Unfortunately, patients with these and other comorbidities such as chronic atrial fibrillation often are excluded from trials and studies addressing this topic due to a fear that TXA may promote thrombosis. It is not yet known if IA is safe in this group of patients. In fact, patients with these comorbidities, especially ischemic heart disease, may benefit the most from reduced blood loss following total knee replacement. For example, if surgical bleeding is reduced by the use of TXA, tachycardia and a decrease in hemoglobin responsible for insufficient myocardial or cerebral oxygen supply might be avoided [3].

Future studies examining TXA in total joint replacement should focus on those patients who currently are believed to have contraindications for the drug.

This CORR Insights® *is a commentary on the article* "What is the Ideal Route of Administration of Tranexamic Acid in TKA? A Randomized Controlled Trial" *by Lee and colleagues available at:* DOI: 10.1007/s11999-017-5311-z.

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This *CORR* Insights® comment refers to the article available at DOI: 10.1007/s11999-017-5311-z.

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Although topical administration has few noted side effects, some systemic absorption of the drug does occur, and it appears to be dose-dependent. Topical application of 1.5 or 3 grams results in a much lower systemic level compared to IV administration of TXA, but can result in a systemic absorption that is within the therapeutic range [3].

How Do We Get There?

Future studies should determine the minimal effective dose of topical TXA. Lower topical doses lead to lower levels of systemic absorption, so it would be worthwhile to determine the smallest effective topical dose to minimize systemic effects of the drug. The next step would be to perform placebo-controlled trials of IA in high-risk patients using the lowest-possible effective dose. This would better guide the safe use of this extremely beneficial drug in a population of patients that currently are considered to have contraindications, but might benefit most from its use.

References

1. Alshryda S, Sukeik M, Sarda P, Blenkinsopp J, Haddad FS, Mason JM. A systematic review and meta-analysis of the topical administration of tranexamic acid in total hip and total knee replacement. *Bone Joint J*. 2014;96B:1005–1015.
2. Kim TK, Chang CB, Koh IJ. Practical issues for the use of transexamic acid in total knee arthroplasty: A systematic review. *Knee Surg Sports Traumatol Arthroscop*. 2014;22:1849–1858.
3. Roberts I. Scientific Letter: Could tranexamic acid use in surgery reduce perioperative myocardial infarction? *Heart*. 2013;99:1785.