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Encouragement for Further Study of Tranexamic Acid Administration for Sacroiliac Joint Fusion Surgery.

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# Encouragement for Further Study of Tranexamic Acid Administration for Sacroiliac Joint Fusion Surgery

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## Abstract

TO THE EDITOR: We read with great interest the article by Huynh et al. regarding the association between tranexamic acid (TXA) and blood loss in patients undergoing surgical treatment for hip fracture (Huynh PAN, Miller M, Will R. Intravenous Tranexamic Acid Decreases Blood Transfusions and Blood Loss for Patients with Surgically Treated Hip Fractures. *Geriatric Orthopedic Surg Rehabil.* 2021). The authors illustrated, via retrospective chart review of 505 patients who were surgically treated for hip fractures, that patients administered TXA had statistically significant decreases in perioperative blood loss and reduced relative risk of transfusion. Huynh et al. reported no statistically significant increases in thromboembolic events in patients given TXA. Mechanistically, TXA is a synthetic anti-fibrinolytic that competitively inhibits the plasminogen activation pathway. By preventing activated plasmin from de-stabilizing the fibrin matrix, TXA promotes clot formation. Given the anti-fibrinolytic effects of TXA, concerns in the literature exist regarding its use being associated with increased risk for thromboembolic events. However, it is important to note the complication profile associated with TXA is minimal, as elucidated by Brown et al., specifically finding that no patients who were administered TXA perioperatively experienced a thromboembolic event (or at least, there were no reports of thromboembolism or any other adverse events). While administration of TXA may theoretically increase the risk for thrombosis, Brown et al. showed this does not seem to occur in spinal laminectomy and fusion with posterior instrumentation. Similarly, in a systematic review of the literature describing TXA use in intracranial tumor resection, this study revealed a statistically significant reduction in the need for intraoperative blood transfusion in patients administered TXA. Upon consideration of postoperative outcomes, no significant increase in complication rate was found. This evidence in the existing literature on TXA use in orthopedic, spinal, and cranial neurosurgery exemplifies the wide potential of TXA for reducing blood loss with minimal complications in surgical procedures, especially involving the craniospinal axis.

## Keywords

tranexamic acid, TXA, sacroiliac, fusion, blood loss

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## To the editor

We read with great interest the article by Huynh et al.<sup>1</sup> regarding the association between tranexamic acid (TXA) and blood loss in patients undergoing surgical treatment for hip fracture (Huynh PAN, Miller M, Will R. Intravenous Tranexamic Acid Decreases Blood Transfusions and Blood Loss for Patients with Surgically Treated Hip Fractures. *Geriatric Orthopedic Surg Rehabil.* 2021). The authors illustrated, via retrospective chart review of 505 patients who were surgically treated for hip fractures, that patients administered TXA had statistically significant decreases in perioperative blood loss and reduced relative risk of transfusion. Huynh et al. reported no statistically significant increases in thromboembolic events in patients given TXA.

Mechanistically, TXA is a synthetic anti-fibrinolytic that competitively inhibits the plasminogen activation pathway. By preventing activated plasmin from de-stabilizing the fibrin matrix, TXA promotes clot formation.<sup>2</sup> Given the anti-fibrinolytic effects of TXA, concerns in the literature exist regarding its use being associated with increased risk for thromboembolic events.<sup>3</sup> However, it is important to note the complication profile associated with TXA is minimal, as elucidated by Brown et al.,<sup>4</sup> specifically finding that no patients who were administered TXA perioperatively experienced a thromboembolic event (or at least, there were no reports of thromboembolism or any other adverse events). While administration of TXA may theoretically increase the risk for thrombosis, Brown et al. showed this does not seem to occur in spinal laminectomy and fusion with posterior instrumentation. Similarly, in a systematic review of the literature describing TXA use in intracranial tumor resection, this study revealed a statistically significant reduction in the need for intraoperative blood transfusion in patients administered TXA.<sup>5</sup> Upon consideration of postoperative outcomes, no significant increase in complication rate was found. This evidence in the existing literature on TXA use in orthopedic, spinal, and cranial neurosurgery exemplifies the wide potential of TXA for reducing blood loss with minimal complications in surgical procedures, especially involving the craniospinal axis.

Upon review of the existing literature, we found that zero studies have been conducted on the effects of TXA administration in sacroiliac joint fusion (SIJF) surgery. In trauma, infectious, and tumor cases, an open SIJF procedure may be conducted to fuse the sacroiliac joint via insertion of spinal instrumentation.<sup>6</sup> The average reported values for estimated blood loss during an open SIJF procedure range from 681 mL to 288 mL.<sup>7,8</sup> Although established safe zones exist for the SIJF procedure, a study by Zhao et al.<sup>9</sup> observed the vascular structures of the superior gluteal artery exist within the safe zones as high as 53% of the time. This finding provides an explanation for the high reported values of estimated blood loss during SIJF.

Because of the high reported values of estimated blood loss, there is increased potential for the utility of TXA, which has been shown to decrease perioperative bleeding in spinal surgery with minimal adverse effects. Given the apparent benefits of TXA as an anti-fibrinolytic agent, we encourage further investigation of its effectiveness and safety profile in sacroiliac joint fusion surgery.

## Declaration of Conflicting Interests

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