The Role of Tranexamic Acid in Mohs Micrographic Surgery for Nonmelanoma Skin Cancer

Taylor Arnoff

Though Mohs micrographic surgery (MMS) is typically associated with a low rate of bleeding complications, around 1% of patients report postoperative bleeding. Postoperative bleeding following MMS more commonly occurs when wounds are left open to heal on their own. The severity of bleeding is dictated by several factors, including the location and size of the surgical wound, involvement of large blood vessels, high blood pressure, and patient use of blood thinning medications. Postoperative bleeding can lead to patient distress and dissatisfaction, increased clinic visits, and higher associated costs.

Antifibrinolytic drugs are a class of medications that prevent breakdown of blood clots. Tranexamic acid (TXA) is one such medication that has been described extensively in the literature for its efficacy in preventing bleeding in trauma cases as well as in various surgical procedures. TXA can be administered intravenously, orally, topically, or subcutaneously. Local administration offers similar benefits and lower risks of systemic side effects. The safety of TXA has been widely demonstrated in the literature, and it is affordable and readily available in a surgical setting.

One study demonstrated the efficacy of a local subcutaneous injection of TXA in reducing the risk of clinically significant bleeding following MMS.[1] TXA decreased the risk for postoperative phone calls or visits for bleeding by 25% and the risk for bleeding requiring a medical visit by 51%. Moreover, the use of preoperative TXA in patients at a higher risk of bleeding, including those using alcohol, cigarettes, or blood thinning medications, was also associated with a reduction in visits for bleeding. Additionally, the use of TXA was associated with reduced visits for bleeding in tumors of the head and neck, as well as tumors exceeding two centimeters in size before surgery. Adverse events were rare, as only two patients developed deep vein thrombosis 10- and 20-days postoperatively, both of whom had risk factors for hypercoagulability. This window was delayed beyond the activity of TXA, suggesting a low likelihood of being due to TXA.

Another study assessed the safety and efficacy of a subcutaneous TXA injection to reduce bleeding during MMS.[2] Patients received an injection of lidocaine diluted with either TXA or saline before MMS. TXA administration resulted in a significant decrease in bleeding compared to saline. The effect of TXA on bleeding was more pronounced in patients who were taking blood thinning medications. TXA also had an impact in the postoperative period, preventing later onset bleeding and bruising. TXA was well-tolerated, with only one reported side effect of a mild local allergic reaction, which quickly resolved.

A third study assessed the efficacy of topical TXA in patients undergoing MMS with defects that were left open to heal.[3] Patients were managed with either a TXA- or saline-soaked pad applied directly to the surgical wound. The dressing was left in place for 48 hours. Within this time period, patients who received TXA had no reported bleeding requiring reference to provided wound care instructions or an office call, compared to a rate of 9.7% in patients managed with saline.

Both subcutaneous injection or topical administration of TXA have been demonstrated to reduce bleeding during and after MMS. Moreover, these effects may be particularly pronounced in patients taking blood thinning medications, who at baseline are at higher risk of postoperative bleeding. The safety and availability of TXA make this agent a favorable consideration for the Mohs surgeon to effectively control bleeding.

References

1. Loranger N, Karn E, Anderson J, et al. Subcutaneous injection of tranexamic acid reduces postoperative bleeding following Mohs micrographic surgery: A single-institution cohort study. *J Am Acad Dermatol*. Published online May 9, 2024. doi:10.1016/j.jaad.2024.05.006

2. Zilinsky I, Barazani TB, Visentin D, Ahuja K, Martinowitz U, Haik J. Subcutaneous Injection of Tranexamic Acid to Reduce Bleeding During Dermatologic Surgery: A Double-Blind, Placebo-Controlled, Randomized Clinical Trial. *Dermatol Surg*. 2019;45(6):759-767. doi:10.1097/DSS.0000000000001786

3. Castillo B, Anokhin A, Golda N. Randomized study on the topical application of tranexamic acid to the wound bed of granulating defects for hemostasis in the setting of Mohs micrographic surgery. *J Am Acad Dermatol*. 2023;88(5):1134-1135. doi:10.1016/j.jaad.2022.08.037