Tranexamic acid for complex skull base surgery

Compared with other procedures, complex skull base neurosurgery has the potential for increased intraoperative blood loss yet coagulation near eloquent cranial structures should be minimized. The safety and efficacy of the antifibrinolytic, tranexamic acid in elective neurosurgical procedures is not known. Our primary objective was to determine the relationship between the use of tranexamic acid and transfusion at our institution. Our secondary objective was to determine the incidence of adverse events associated with the use of tranexamic acid.

In this retrospective cohort study, we included all patients who underwent complex skull base neurosurgical procedures at our institution between 2001 and 2013. Tranexamic acid was introduced during these procedures in 2006. Patient and surgical variables, transfusion data, and adverse events in the perioperative period were abstracted from the medical record. The rates of transfusion and adverse events were compared between patients who did and did not receive tranexamic acid. Multivariate regression was used to identify independent predictors of perioperative transfusion.

We compared 245 patients who received tranexamic acid with 274 patients who did not receive the drug during the study period. The 2 groups were similar, with the exception that patients who received tranexamic acid had larger tumors (mean, 3.5 vs 2.9 cm; $P < 0.001$) and longer procedures (mean, 7.2 vs 6.2 hours, $P < 0.001$). The rate of perioperative transfusion in patients who received tranexamic acid was lower (7% vs 13%, $P = 0.04$). After adjusting for preoperative hemoglobin, tumor diameter, and surgical procedure category, the use of tranexamic acid was independently predictive of perioperative transfusion (adjusted odds ratio, 0.32; 95% confidence interval, 0.15-0.65, $P = 0.002$). The rates of thromboembolic events and seizure were similar between the 2 groups.

Our results demonstrate that tranexamic acid use is associated with reduced transfusion rates in our study population, with no apparent increase in seizure or thrombotic complications. Our data support the need for further randomized clinical trials to evaluate the efficacy and safety of tranexamic acid on perioperative blood loss during complex skull base neurosurgery [1)].

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Mebel D, Akagami R, Flexman AM. Use of Tranexamic Acid Is Associated with Reduced Blood Product Transfusion in Complex Skull Base Neurosurgical Procedures: A Retrospective Cohort Study. Anesth Analg. 2016 Feb;122(2):503-8. doi: 10.1213/ANE.0000000000001065. PubMed PMID: 26554461.