Development of Spontaneous Intracranial Epidural Hematoma in a Patient Undergoing Transcranial Vault Repair-Lessons Learned

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Introduction
The newborn skull accommodates rapid growth via the presence of unfused sutures and open fontanelles. Premature closure could lead to impaired brain growth and cognitive development. The incidence of craniosynostosis is believed to be about 0.6 per 1000 live births [1]. This case presents a challenge to anesthesiologists as these patients can have extensive blood loss in a short period of time requiring massive PRBC transfusion. In addition to this, there is a clinically significant incidence of thrombotic and hemorrhagic complications necessitating the accurate diagnosis of hemostatic abnormalities that are essential to the perioperative assessment of children with potential bleeding disorders [2].

Case Presentation
Patient is an 8 month old 8 kilogram baby born at 38 weeks without any complications who was scheduled for a transcranial vault repair. There was a past medical history of RSV infection at the age of 3 months that required 2 days of hospitalization without intubation.

On the day of surgery, the patient was taken to the operating room and monitors placed. Inhalation induction using Sevofurane done, lines placed and patient intubated. Case was uneventful with the exception of blood loss of 700 cc. Patient was resuscitated with 150 ml of 5% albumin, 650 ml of PRBCs, and 650 ml of FFP. OMFS and Neurosurgery services noted unusual oozing of blood from the surgical site at the start of the case that worsened as the case progressed. At the end of surgery, patient was taken to PICU intubated. Initial hemoglobin upon arrival to the PICU was 8.4 with platelet count of 19,000. Patient was again transfused with PRBCs and H&Hs being done every 4 hours continued to show a downward trend. Patient was then taken to CT scan where he was noted to have intracranial epidural hematoma thought to be secondary to dilutional coagulopathy vs DIC. The patient was then emergently taken to operating room for hematoma evacuation and PRBC and platelets were transfused during the case.

Discussion
While craniosynostosis remains a fairly common problem, excessive blood loss during transcranial vault repair continues to present a challenge in resuscitating pediatric patients to the anesthesiologist. Controversy continues to exist regarding the ratio of blood products and when the blood products should be administered. Obtaining labs frequently and replacing blood products including platelets can decrease postoperative complications. The outcome of this case has lead to changes in the way we handle this type of surgery at our institution. We now check coagulation parameters as well as a complete blood cell count both intraoperatively and immediately postoperatively.

Hospital Course
After evacuation of the epidural hematoma, repeat CT showed marked improvement of the hematoma with resolution of midline shift. Coagulopathy resolved and repeat H&Hs remained stable. Patient was left intubated for a total of 2 days and given Lasix and Decadron. Postoperatively the patient developed a fever which was treated with antibiotics. Patient was extubated without event and watched overnight before being transferred to the floor. Patient did well on the floor and was discharged on postoperative day 4.

References