[NM-129] Massive hemorrhage in a child undergoing a hip osteotomy

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Introduction:
Children with hip dysplasia come to the operating room (O.R.) for various orthopedic procedures including a triple pelvic (innominate) osteotomy. Typical estimated blood loss (EBL) for these cases varies from 100-600 milliliters (mls.)(1). In our case, the patient (pt.) had an unanticipated massive hemorrhage of 14,300 ml., requiring a massive transfusion protocol to be initiated.

Case presentation:
The pt. is a healthy 12 year old, 42 kilogram male who was scheduled to undergo a left (L.) triple pelvic osteotomy for L. hip dysplasia. His past surgical history is significant for a L. femoral osteotomy 4 years prior, in which the pt. experienced an unremarkable perioperative course. The pt. was induced with intravenous (I.V.) Propofol, Fentanyl and Rocuronium. He was intubated uneventfully. A second I.V. was started and warmed fluids were administered. A lumbar epidural was placed without complications under general anesthesia. An epidural bupivicaine infusion was started after a negative test dose. In addition, oxygen/air, sevoflurane and intermittent doses of midazolam, fentanyl, and vecuronium were used for maintenance of general anesthesia. Approximately 2 hours into the case, significant bleeding occurred. The pt. became hypotensive and tachycardic. 100% oxygen was administered. The epidural infusion and Sevoflurane were discontinued. The surgeon packed the incision initially allowing time for fluid resuscitation and for a massive blood transfusion protocol to be initiated. Additional help was called and an arterial line was placed. A vascular surgical team arrived and noted that the external iliac vein and L. hypogastric artery were injured. The orthopedic portion of the case was aborted and the injured vessels were repaired. A taut abdomen was noted after the drapes were taken down. A hemoglobin was checked and noted to have dropped from 9 to 6 mg/dl. This necessitated an exploratory laparotomy to determine the cause of the taut abdomen. A large retroperitoneal hematoma extending up the (L) paracolic gutter was found and evacuated. Total EBL was 14,300 ml (5 blood volumes). The pt. was transfused 25 units (U) of PRBCs, 12 U of FFP, 5U of platelets, 5U of cryoprecipitate over 7 hours. He was given Factor 7 as well. Epinephrine, phenylephrine, calcium chloride and sodium bicarbonate were used to maintain reasonable hemodynamic parameters and to treat acidosis. Once the pts. hemodynamic parameters stabilized, a right internal jugular central venous line was placed under ultrasound guidance for postoperative fluid management. The pt. was then transferred intubated to the pediatric intensive care unit in critical but stable condition.
The child was brought back to the O.R. one week later for repair of his hip dysplasia without complications.

Discussion: This is a surgical case of unanticipted massive blood loss. The key elements responsible for a successful resuscitation included close communication with the surgeon, employing the massive transfusion protocol already established at our institution and calling for help early on.

References: (1) Gamble,JG et al.:Pelvic osteotomy. In Anesthesiologist's Manual Of Surgical Procedures, 4th Ed..Jaffe, RA, Samuels, SI eds. Lippincott W&W, Philadelphia: 2009,1361-3
