The Anesthetic Management of Craniopagus Twin Separation
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Management

Initial anesthetic management was required for preoperative imaging studies. Subsequent anesthetics were required for the surgical separation procedures. An anesthetic team consisting of a pediatric anesthesiologist and fellow was designated for each child. Simultaneous inhalation inductions were performed. Observations made during the anesthetics suggested little inhaled agent crossed from twin to twin. Difficult direct laryngoscopy was encountered with Twin A initially secondary to micrognathia. Twin B was always easily intubated with traditional direct laryngoscopy. A similar approach was taken for the next three procedures. Of note, despite not seeing much effect of inhaled anesthetic agents from one twin to the other, it was observed that intravenous agents and transfused blood were shared in equilibrium. After the third procedure the twins required reintubation 24 hours postop. At that time, profound right ventricular failure was noted in Twin A requiring vasoactive medications and nitric oxide for control. There was complete resolution of the RV dysfunction in 5 days. The twins remained intubated for 23 days. The RV dysfunction did not recur.

For the final separation, each twin had established central IV access and after adequate pre-oxygenation, an IV induction was employed. Both twins were easily intubated at this time. During this final procedure, instrumentation by the neurosurgical team of the shared cortical tissue resulted in dramatic hemodynamic instability and tachyarrhythmias of Twin A, while Twin B remained stable without hemodynamic support. Upon final separation, Twin A regained hemodynamic stability and vasopressor support was successfully de-escalated prior to leaving the operating room. All vasopressor agents were titrated off within 48 hours of final separation suggesting that the vascular connection between children created significant hemodynamic strain for Twin A.

Discussion

Craniopagus twins present a unique challenge to the anesthetic provider due to concern for difficult airway access, unknown effects of anesthetic agents between children, and the interplay of one twin’s hemodynamics upon the other. We observed that each twin required a unique approach by two separate anesthetic teams. Management of these children requires careful preoperative assessment, preparedness for difficult airway management, and vigilant monitoring of each child for the unique hemodynamic effects of one twin upon the other until final separation.

References


BACKGROUND

Craniopagus twins are the rarest phenotype of conjoined twins with an incidence of 0.6 per million births. Furthermore, approximately 40% of these cases result in stillborn delivery, and another 33% expire during the immediate neonatal period resulting in a paucity of cases which present for separation (Browd). This case discusses the anesthetic management of craniopagus twins who were separated at our institution over a period of four procedures which occurred over eight months.