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Classic open craniofacial surgery without transfusion: A novel multimodal approach

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Primary open repair of craniosynostosis has reported transfusion rates approaching 100%. We have developed a multimodal approach to blood conservation in an attempt to decrease rates of transfusion. Children aged one year or under undergoing primary repair of craniosynostosis from 10/1/13 to 1/15/16 received a multimodal approach to blood conservation including: pre-operative erythropoietin and oral ferrous sulfate, tumescent infiltration of the scalp incision, plasma blade incision and dissection, modest hemodilution and I V tranexamic acid. All children with an Hgb less than 7g/dL or symptomatic of anemia were transfused. Surgical technique remained unchanged with classic fronto-orbital advancement and anterior cranial vault remodeling for anterior craniosynostosis, posterior calvarial remodeling for lambdoid and sagittal craniosynostosis including barrel stave type osteotomies, out fracture of the cranial base and interposition bone grafts. 96 children underwent repair with a mean age of 0.51 years. 74 (77%) did not require transfusion. Posterior repairs (n=55) averaged 6.5 mL/kg blood loss and 18% transfusion rate. Anterior repairs (n=41) averaged 9.1 mL/kg blood loss and 29% transfusion rate. Operative time averaged 55 minutes for posterior repairs and 82 minutes for anterior repairs. This is a significant advance in blood conservation. Transfusion rates have dropped 82% for our posterior repairs. As experience is gained we expect further decreases in rates of transfusion.

Recent Publications

1. Wood RJ, Parnell T: Redefining the Approach to Blood Management During Cranial Vault Remodeling Surgery. Minnesota MD News, June, 2016
2. Wood RJ: 2015 Craniofacial Outcomes Report. Gillette Children's Specialty Healthcare, June, 2016
3. Wood RJ: Diagnosing and Treating Deformational Plagiocephaly, Torticollis and Craniosynostosis in Infants. A Pediatric Perspective, 22 (5), 2013
4. Wood RJ: Craniosynostosis and Deformational Plagiocephaly: When and How to Intervene. Minnesota Medicine, 95(6):46-9, 2012.
5. Wood RJ, Petronio JA, Graupman PC, Shell CD, Gear AJ; New resorbable plate and screw system in pediatric craniofacial surgery, Journal of Craniofacial Surgery, 23(3); 845-9, 2012.

Biography

Robert J. Wood, has been appointed as the Associate Medical Director Craniofacial and Plastic Surgery, Gillette Children's Specialty Healthcare in 2014. He is also the Medical Director, Minnesota Centre for Craniofacial Services since 1999. His interests in the field are mostly with Craniofacial and Plastic Surgery.

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