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Complications in craniostosis surgery: review of 164 procedures

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Introduction: This study aims to establish the complication rate and blood transfusion rate of craniostosis surgery to compare minimally invasive endoscopic and open surgical procedures, to improve informed consent of parents, and to establish a baseline for further targeted improvement of surgical care.

Methods: A prospective complication registration database that contains a consecutive cohort of all pediatric neurosurgical procedures in our neurosurgical department was used. All pediatric patients that underwent neurosurgical treatment for craniostosis between February 2004 and December 2013 were included. In total, 164 procedures were performed of which 105 were endoscopically assisted minimally invasive procedures (64%). 81 patients were diagnosed with scaphocephaly, 44 with trigonocephaly, 22 with plagiocephaly, 3 with brachycephaly, 6 patients were diagnosed with a craniostosis syndrome, 6 patients were suffering from non-syndromal multisutural craniostosis and 2 patients were re-operated.

Results: There was no mortality nor any permanent morbidity or neurological sequelae. A total of 12 complications occurred in 164 procedures (7,3%) of which 4,3% (n=7) occurred intra-operatively and 3,0% (n=5) post-operatively. In the open surgical procedure 7 complications occurred: 5 intra-operatively and 2 post-operatively. For the endoscopically assisted procedure 5 complications occurred: 2 intra-operatively and 3 post-operatively.

Blood transfusion was needed in 100% (N=59) of the open surgical procedures while only in 20% (N=21) of the endoscopic procedures.

One patient suffered from a transfusion reaction and two infections occurred, one gastroenteritis and one wound infection. Dural tear is the most common intra-operative complication that occurred (n=5), but never led to postoperative sequelae. Intraoperative bleeding from a sagittal sinus occurred in one patient, however with only minimal bloodloss.

Conclusion: Complications during craniostosis surgery are relatively few and minor and without permanent sequelae in open as well as in minimally invasive procedures. The blood transfusion rate, however, is significantly reduced by the endoscopic procedures.