Endoscopic-assisted Management of Sagittal Synostosis: Wide Vertex Suturectomy and Barrel Stave Osteotomies versus Narrow Vertex Suturectomy

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Abstract

Background: Endoscopic-assisted technique for the treatment of craniosynostosis is gaining in popularity. The benefits in regards to operating room time, blood transfusion rates, hospital stay and reduced cost of treatment have been reported with equivalent improvement in cephalic index compared to open calvarial vault reconstruction.[1-3] This study investigates two methods for endoscopic-assisted correction of sagittal synostosis: wide vertex suturectomy and barrel stave osteotomies versus narrow vertex suturectomy.

Methods: The authors prospectively observed patients with nonsyndromic sagittal synostosis treated with the endoscopic-assisted technique and molding helmet therapy. Wide vertex suturectomy (5cm) and barrel stave osteotomies was used exclusively between 2006 and 2010. Narrow vertex suturectomy (2.5 cm) was used between 2011 and 2012. All patients received 3 dimensional photographs for standardized assessment of head shape preoperatively and at subsequent postoperative evaluations. Patients were also measured by direct caliper measures to determine cranial index. The data collected included age at operation, blood loss, postoperative hemoglobin, transfusion rates, operating room times, and cephalic index.

Results: Twenty patients (10 wide vertex and barrel stave osteotomies (WV+BSO) and 10 narrow vertex (NV)) with isolated sagittal synostosis were treated by the endoscopic-assisted technique and moulding helmet therapy. Mean age at operation and follow-up time was 3.8 and 10 months for NV and 3.6 and 13 months for WV+BSO. Mean operating room time was 66 minutes for the NV group and 88 minutes for the WV+BSO group. The mean blood loss was 29ml for NV with 0% (0 of 10 patients) transfusion rate versus 49 ml and 0% (0 of 10 patients) transfusion rate for WV+BSO. Postoperative hemoglobin was 8.4g/dL and 7.3g/dL for the NV and WV+BSO groups. The pre- and postoperative cephalic index for the NV technique was 69% and 79% versus 72% and 80% for WV+BSO.

Conclusions: Narrow-vertex suturectomy and moulding helmet therapy is effective in the treatment of sagittal synostosis. Avoiding additional barrel stave osteotomies can decrease operating room time and risk of transfusion.

References:


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