OP06

Total cranial vault remodelling for isolated sagittal synostosis: postoperative cranial suture patency

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Background: Total cranial vault reconstruction addresses all phenotypic aspects of scaphocephaly. The clinical implications of remodeling across open cranial sutures, however, remain unclear. The purpose of this study is to assess patency of unaffected sutures following total vault remodeling for isolated sagittal synostosis.

Methods: The authors reviewed all patients who underwent total vault remodeling for isolated sagittal synostosis between 2004-2008, a period when craniofacial computed tomographic (CT) scans were routinely performed postoperatively. Degree of patency of coronal and lambdoidal sutures was scored by a single reviewer as: 0 = closed; 1 = partial; and 2 = open. Individual suture scores were tallied for a total sutural patency score. CT scans were also categorized by postoperative time and by craniofacial surgeon.

Results: 42 patients met the inclusion criteria. Individual sutural closure rates were 42.6%, 38.3%, 74.5%, and 74.5% for right coronal, left coronal, right lambdoidal, and left lambdoidal sutures, respectively. Lambdoidal sutures had a significantly higher rate of closure than coronals ($OR^{Closure}$ 4.3, 95% C.I. 2.3 – 8.0, $p < 0.001$); lambdoidal patency significantly changed over time ($c^2 = 9.9$, $p = 0.04$). Across craniofacial surgeons, coronal and lambdoidal patency were equivalent. The total sutural patency score did not significantly correlate with postoperative time, surgical age, preoperative cephalic index, or craniofacial surgeon.

Conclusions: Total vault remodeling for isolated sagittal synostosis results in a high degree of secondary craniosynostosis. Lambdoidal sutures are especially prone to closure, with their patency diminishing over time. The long-term implications of these findings are being evaluated by growth, morphometric, and neurocognitive studies.