

## OP04

**Three patterns of front-orbital remodelling for metopic synostosis: comparison of cranial growth outcomes**

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**Background:** The purpose of this study was to compare cranial growth across three patterns of fronto-orbital remodeling for metopic synostosis.

**Methods:** The authors reviewed all patients who underwent fronto-orbital remodeling for isolated metopic synostosis between 2006-2009. Inclusion criteria consisted of patients with preoperative (T0), short-term postoperative (T1; 4-12 months), and long-term postoperative (T2; > 36 months) three-dimensional photographs. Patients were categorized by fronto-orbital remodeling pattern: retrocoronal (Group 1), partial coronal (Group 2), and precoronal (Group 3). Head circumference (HC), minimum frontal breadth (ft-ft), and maximum cranial length (g-op) were measured by three-dimensional photos, converted to standard (Z) scores, and compared.

**Results:** 31 patients met the inclusion criteria (Group 1, n=12; Group 2, n=10; Group 3, n=9). Group 1 presented with greatest phenotypic severity. From T0 to T1, HC Z-scores rose for Group 1 but dropped for Groups 2 and 3 and the 3 groups demonstrated equivalent increases in ft-ft Z-scores. From T1 to T2, the 3 groups demonstrated similar stability in HC Z-scores but decreased ft-ft Z-scores. From T0 to T2, HC Z-scores rose for Group 1 but fell for Groups 2 and 3 ( $\Delta Z$ : 0.5, -0.5, -0.7; respectively;  $p = 0.06$ ) and the 3 groups demonstrated equivalent drops in ft-ft Z-scores. Across T0 to T1 and T0 to T2, Group 1 displayed the least drop in g-op Z-scores.

**Conclusions:** Retrocoronal patterns of fronto-orbital remodeling provide long-term gains in head circumference percentile and the least growth impairment in cranial length. Irrespective of osteotomy design, expansion in frontal breadth relapses over time.