The Open Operculum in Infants with Congenital Heart Disease

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Purpose
To determine the incidence of open opercula in infants surviving newborn heart surgery for congenital heart disease (CHD). The cerebral operculum is a region comprised of structures from the frontal, temporal, and parietal lobes. Its formation usually is complete by term, rendering the operculum closed. An incompletely formed operculum is open and considered a developmental brain anomaly of uncertain clinical significance. Postmortem brain examinations (1) have revealed an open operculum in 8 of 39 (20%) infants with the hypoplastic left heart syndrome (HLHS). No data exist in those with other forms of CHD (non-HLHS). We reviewed brain MR examinations in 74 infants who survived newborn heart surgery for CHD. The proportions of HLHS and non-HLHS patients with open opercula and quantitative measurements of the opercular walls were determined (2).

Materials & Methods
Study subjects constitute 74 infants who underwent and survived CHD surgery at our institution from 1995 to 1997. The dimensions (mm) of the walls of the operculum were measured in each infant on axial and coronal views from T1, T2 and FLAIR sequences.

Results
Study subjects (43 males, 31 females) were between 6 days and 10 months with gestational ages between 29 and 41 weeks. All were postterm at the time of their MR exams. Completely closed opercula were uncommon (18/74; 24%). A variable degree of bilaterally open opercula occurred in 34/74 (46%), unilateral (left) open operculum in 20/74 (27%) and unilateral (right) open operculum in 2/74 (3%).

Conclusion
Among the known functions of opercular cortex are taste aversion behavior and regulation of heart rate and sympathetic tone(3, 4). The relatively high proportion of CHD infants with open opercula raises the concern that there could be an association between this anomaly and disorders of cardiac rhythm and feeding which are common in this population.

References
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