

## Is delivery mode associated with intraventricular haemorrhage in very preterm infants? A retrospective analysis using brain magnetic resonance performed at term-equivalent age

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**Objective.** To evaluate the association between delivery mode and intraventricular haemorrhage (IVH) in very preterm infants.

**Methods.** We retrospectively reviewed 280 brain MRI scans routinely performed at term-equivalent age (TEA:39<sup>+0/7</sup>-41<sup>+6/7</sup> weeks/days) in infants born between 24<sup>+0/7</sup> and 31<sup>+6/7</sup> week/days at "G. Salesi" Children's Hospital, Ancona, Italy, from 01/01/2018 to 12/31/2023. Infants with malformations, delivery complications (*e.g.*, placental abruption, cord prolapse, abnormal cardiotocographic tracing), no antenatal corticosteroids, or unavailable susceptibility-weighted imaging (SWI) were excluded. The primary outcome was IVH grades I-IV detected by SWI-sequences at TEA. The associations between delivery mode, caesarean section (CS) *versus* vaginal delivery (VD), and IVH were analysed using multiple regression.

**Results.** Of 159 eligible infants, 74% were born by CS. SWI-se-

quences identified 48 cases of IVH, 27 of which were undetected by routine cranial ultrasound. IVH incidence was lower in CS than VD infants (IVH grades I-IV: 24 *vs* 48%,  $p = 0.004$ ; IVH grades I-II: 23 *vs* 41%,  $p = 0.031$ ; IVH grades III-IV: 1 *vs* 7%,  $p = 0.026$ ). CS was associated with a lower likelihood of IVH (aOR: 0.36,  $p = 0.026$ ) after adjusting for GA, SGA<sup>BW</sup> < 10<sup>o</sup> centile, hypertensive disorders of pregnancy, early-onset sepsis, hemodynamically significant patent ductus arteriosus, histological chorioamnionitis, need of mechanical ventilation and inotropes/vasoactive amines in the first week of life.

**Conclusions.** We provide novel information on the association between delivery mode and IVH in a selected population of uncomplicated deliveries. The incidence of IVH was significantly higher in CS *vs* VD. MRI-SWI sequences detected over twice as many IVH cases as cranial ultrasound.