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Abstract Title

Relationship Between Amniotic Fluid Volume and Pregnancy Outcomes After Preterm, Prelabour Rupture of Membranes (PPROM): Systematic Review and Meta-Analysis

Authors

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Background

Preterm prelabour rupture of membranes (PPROM) accounts for one-third of preterm births and complicates 3% of all pregnancies. Reduced amniotic fluid volume after PPRM has been linked to adverse pregnancy outcomes, but the magnitude of this association remains poorly characterized.

Objective

We hypothesized that reduced amniotic fluid volume after PPRM would be independently associated with adverse perinatal, neonatal and maternal outcomes in singleton pregnancies

Methods

MEDLINE, Embase, CINAHL, and Scopus were searched (1998-2026) for cohort studies comparing outcomes between reduced and normal amniotic fluid volume after PPRM in singleton pregnancies. Study quality was assessed using the Newcastle-Ottawa Scale, and pooled odds ratios (OR) with 95% confidence intervals (CI) were calculated using random-effects models for perinatal death, Cesarean delivery, placental abruption, and neonatal respiratory morbidity.

Results

Of 11,035 records identified, 12 cohort studies (1,841 singleton pregnancies) met inclusion criteria. Reduced amniotic fluid volume after PPRM was associated with a four-fold increase in odds of perinatal death (pooled OR 4.35, 95% CI 2.83-6.70) and increased odds of bronchopulmonary dysplasia (pooled OR 2.56, 95% CI 1.82-3.58). The perinatal death association showed no significant heterogeneity and was consistent across subgroups stratified by gestational age and fluid-assessment method. No significant association was found between reduced fluid and Cesarean delivery (pooled OR 1.41, 95% CI 0.67 - 2.94),

placental abruption (pooled OR 0.95, 95% CI 0.61 - 1.46), or respiratory distress syndrome (pooled OR 1.27, 95% CI 0.82 - 1.98).

Conclusion

Reduced amniotic fluid volume after PPROM identifies a higher-risk subgroup for perinatal death and bronchopulmonary dysplasia. Amniotic fluid is already routinely measured after PPROM diagnosis, incorporating it into risk stratification could refine prognostication and personalize counselling for families experiencing pregnancies complicated by PPROM.

Table/Figure File

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