The Role of Foetal Blood Sampling in Labour: A Systematic Review and Meta-Analysis

Maya C Siriwardena, Charlotte Caroff, Professor Siobhan Quenby, Dr Joshua Odendaal - Warwick Medical School, University of Warwick, Coventry, United Kingdom, CV4 7HL

WARWICK MEDICAL SCHOOL

Background

The use of foetal blood sampling (FBS) in the assessment of pathological foetal heart-monitoring is included in current United Kingdom guidelines. The process aims to reduce the incidence of hypoxic ischaemic encephalopathy. Its use, however, is controversial. A **systematic review and meta-analysis** was performed to assess the effect of its use on outcome.

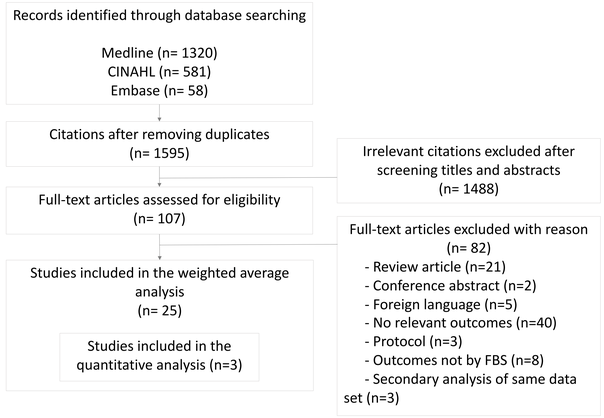
Method

The protocol for this review was prospectively registered (CRD42021268602). Pre-designed searches were conducted across Medline, Embase and CINAHL. Cohort and randomised studies published since 1990 reporting on outcomes associated with FBS were included in the review. A **weighted average** of outcome data was conducted where no control group existed. For controlled studies, a **fixed-effect pooled estimate** of outcome was performed.

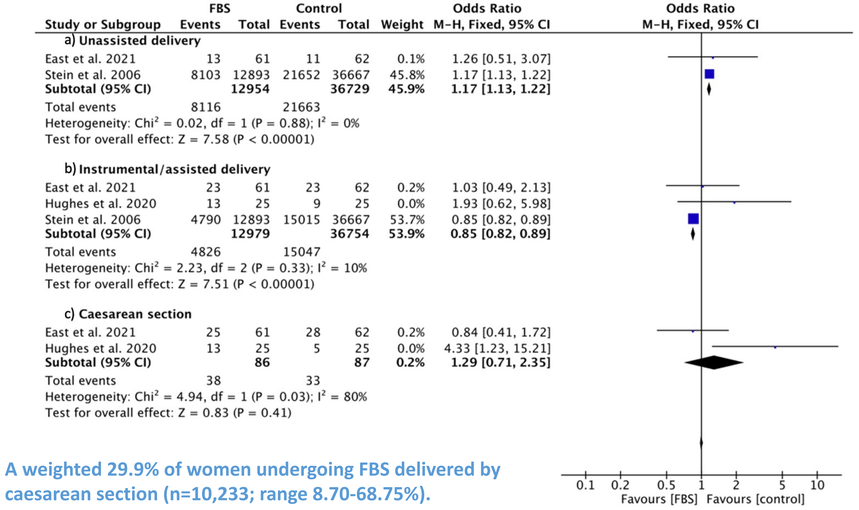
Results

Twenty-five studies were included in this analysis of which three contained control groups suitable for meta-analysis (Figure 1).

Figure 1. Study selection flow chart



Maternal outcomes



A weighted 29.9% of women undergoing FBS delivered by caesarean section (n=10,233; range 8.70-68.75%).

Figure 2. Forest plots of studies assessing obstetric outcomes a) Unassisted delivery, b) Instrumental/assisted deliveries, c) Caesarean section

Neonatal outcomes

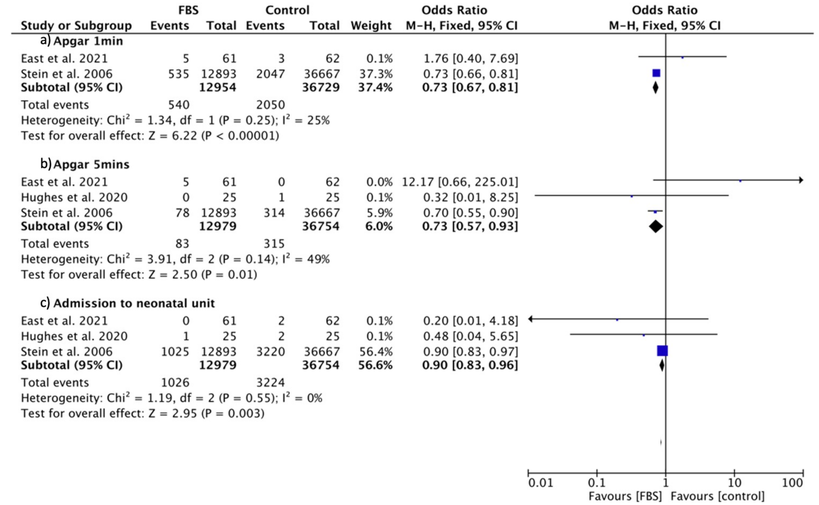


Figure 3. Forest plots of studies assessing neonatal outcomes a) Apgar 1min, b) Apgar 5mins, c) Admission to neonatal unit.

Conclusion

A **lack of high-quality studies** assessing the use of FBS was found. No reduction in caesarean rate was detected, but higher rates of unassisted delivery, reduced risk of instrumental delivery and improved neonatal outcome were seen. These results were however, skewed by a single study. **The role and impact of FBS in labour management remains controversial**.