Maternal position during caesarean section for preventing maternal and neonatal complications

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An updated version of this systematic review has been published and can be found online at www.cochrane.org. We will soon update the below RHL summary to reflect the updated findings of the systematic review.

Available data on the use of different maternal positions during caesarean section to reduce maternal and fetal complications are insufficient to draw meaningful conclusions. Hence, none of the currently practiced maternal positions during caesarean section can be recommended.

RHL Commentary by Okusanya BO

1. INTRODUCTION

Caesarean section is a common surgical procedure worldwide with an estimated prevalence rate of 33% (1). Owing to its variable indications, the prevalence of caesarean section ranges from 4% in Africa to 29% in Latin America and the Caribbean (2) .

At caesarean section, women are placed in a number of positions on the theatre table in a bid to prevent aorto-caval compression which may cause complications in the woman and her fetus. Mendonca et al. (3) compared the left lateral and left tilted positions (120 left lateral tilt) after combined spinal-epidural anaesthesia for caesarean section and concluded that the left lateral position reduces the incidence of early onset hypotension, but even if it occurs, it can be easily treated in that position (3).

Unfortunately, most of the positions adopted are based on opinions of anaesthetists and obstetricians with little or no evidence to support their benefit. This commentary is on a systematic review (4) that assessed the implications of different maternal positions during caesarean section for the prevention of maternal and neonatal complications.

2. METHODS OF THE REVIEW

The authors of the systematic review planned to include randomized controlled trials of women undergoing caesarean section. They compared the neutral supine position to lateral tilt, head raised, head lowered, table
flexed and placement of wedges and cushions.

The authors searched for eligible articles electronically in the Cochrane Central Register of controlled trials (CENTRAL) and MEDLINE. Hand searches of journals and conference proceedings and email alerts from BioMed Central were also used to identify studies. There were no language restrictions in the search.

Two review authors independently assessed the available studies for inclusion in the review and any disagreements were resolved by a discussion with the third author. The data were analysed using Review Manager Software (RevMan 2008). Sequence generation, allocation concealment, blinding, incomplete outcome data, and selective reporting bias were used to assess the risk of bias in the included studies.

Primary outcome measures included air embolism, maternal hypotension and hypertension (as defined by trial authors). Secondary outcome measures included: maternal morbidity; any illness or disability occurring as a result of or in relation to pregnancy and childbirth, neonatal morbidity; any illness or disability occurring within the first 28 days of life, including any grade of hypoxic ischaemic encephalopathy; and admission to neonatal intensive care.

Additional secondary outcome measures were: maternal mortality; neonatal mortality; changes in maternal pulse rate and blood gas values (as defined by trial authors); cord blood gas pH or pH less than 7.2 or pH (as defined by trial authors); five-minute Apgar score less than seven or low Apgar score at five minutes (as defined by trial authors); maternal blood loss; postoperative recovery; complications (any maternal complications arising from delivery up until 6 weeks post partum); breastfeeding; patient satisfaction; caregiver satisfaction; and cost.

3. RESULTS OF THE REVIEW

Seventeen studies were identified, out of which, nine studies involving 683 women were included in the systematic review. Allocation concealment was suboptimal in most of the studies and inadequate blinding characterized all but one of them.

When maternal position in 200 left lateral tilt was compared with the horizontal position, there was no influence on the incidence of hypotension [relative risk (RR) 0.11; 95% confidence interval (CI) 0.01–1.94], and there were no changes in systolic [Mean difference (MD) 2.70 mmHg; 95% CI ?1.47 to 6.87] and diastolic blood pressure (MD ?1.90 mmHg; 95% CI ?5.28 to 1.48). More so, when 200 lateral tilt was compared with supine position, there was no significant effect on: (i) maternal pulse rate changes five minutes after spinal anaesthesia (MD 2.50; 95% CI ?1.86 to 6.86); (ii) five-minute Apgar scores (RR 0.98; 95% CI 0.25–3.81); (iii) cord blood pH less than 7.2 (RR 1.06; 95% CI 0.66–1.69); and (iv) cord blood pH (MD 0.01; 95% CI ?0.01 to 0.03).

When the full left lateral tilt was compared with 150 left lateral tilt, maternal position did not increase the risk of hypotension (RR 1.20; 95% CI 0.80–1.79) and there were no changes in systolic and diastolic blood pressure (MD ?5.00 mmHg; 95% CI ?11.45 to 1.45).

Right lateral tilt position did not influence the risk of hypotension when compared to a horizontal position (RR 1.25; 95% CI 0.39–3.99). However, when right lateral tilt was compared to left lateral tilt, higher number of hypotensive events occurred in the right lateral tilt group (RR 3.30; 95% CI 1.20–9.08).
There was no statistical difference in incidence of hypertensive events in this systematic review (RR 3.52; 95% CI 0.41–30.14). On the contrary, when left lateral tilt was compared with right lateral tilt, there was a statistically significant difference in maternal blood pH values (MD ?0.40; 95% CI ?0.72 to ?0.08), umbilical artery cord blood gas pH (MD 1.80; 95% CI 1.34–2.26), and umbilical blood venous cord blood gas pH values (MD 2.90; 95% CI 2.33–3.47).

All secondary outcome measures were not assessed because the included studies did not report on them.

### 4. Discussion

#### 4.1. Applicability of the results

This review aimed to assess the evidence for the use of different maternal positions during caesarean section. However, important limitations and small samples sizes in the studies included in the review make it impossible to determine if different maternal position during caesarean section reduce maternal and fetal complications. Therefore, none of the currently practised maternal positions during caesarean section can be recommended.

#### 4.2. Implementation of the intervention

No specific maternal position can be recommended as being superior for use during caesarean section. However, it may be advisable to caution clinicians about the finding that, compared with left lateral tilt, more hypotensive events occurred in women who were operated with right lateral tilt.

#### 4.3. Implications for research

Further large randomized controlled trials are needed to assess the benefit of various maternal positions during caesarean section on feto-maternal complications. More so, no study assessed the impact of maternal position on duration of surgery and the risk of surgical complications. There is also a need for randomized trials to be done in Latin America and the Caribbean where the rate of caesarean section are among the highest in the world.

### References


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