

A Retrospective Comparison of Neonatal Acid-Base Status Before and After Discontinuing Routine Left Uterine Displacement for Elective Cesarean Delivery

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Background

- Maintaining 15 degrees LUD during CD - longstanding OB Anesthesia dogma¹
 - MRI imaging confirms IVC only meaningfully offloaded in ≥ 30 degrees tilt²
 - Our RCT (conducted Jan-Dec 2015) showed maternal supine position during elective CD w/ spinal anesthesia in healthy, term women does NOT impair neonatal acid-base status **IF maternal SBP maintained at baseline w/ prophylactic phenylephrine IVI and crystalloid coload** (our standard protocol)³
 - Following this study, ***routine*** LUD at CD abandoned in our institution
- Hypothesis:** There will be no difference in mean umbilical artery BE among neonates delivered by elective CD at term “before” (2014) and “after” (2017) the practice change

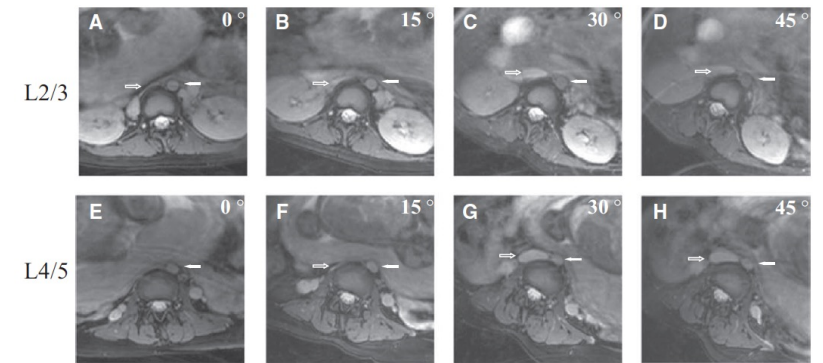


Figure: MRI in supine, 15, 30, and 45 degrees left tilt
From Higuchi et al., Anesthesiology. 2015 Feb;122(2):286-93.

Methods

- Retrospective cohort study
- Statistical Design:** Significant diff. between groups - 0.5 mmol/L. & SD 1.5; estimated sample size = total 142 in each group to reject null hypothesis at 80% power, alpha 0.05.
- Subjects:** ASA 2 or 3 parturients aged 18 to 55 yrs., undergoing elective, CD at term w/ spinal anesthesia
 - 2014 “Tilt” Group, n =201, “Tilt”
 - 2017 “Supine” Group, n =202

Results

- No difference in UA BE between “Tilt” and “Supine” groups
- No difference in outliers in neonatal acid-base status, Apgar scores, or need for resuscitation

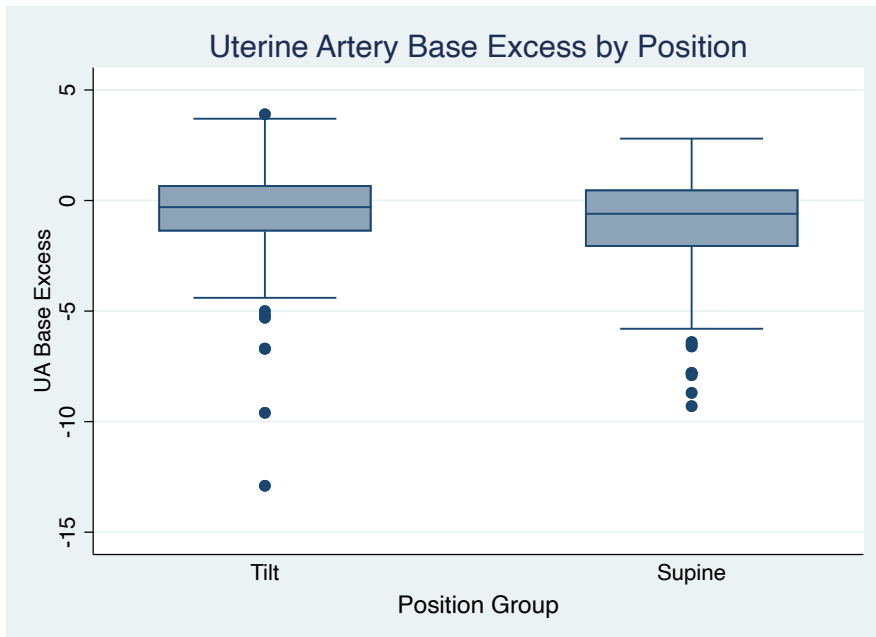


Figure 2: Box plot UA by group. Mean $\pm$ SD UA BE - “Tilt” group = -0.6 ± 2.1 and for “Supine” group = -1.0 ± 2.2 , p N.S.. Unpaired t-test for analysis

Table: Neonatal outcomes by group. Continuous variables analyzed with unpaired t-test, categorical variables with Chi-squared test

	“Tilt” Group	“Supine” Group	P Value
UA blood gases	N = 201	N = 200	
pH	$7.27 \pm .05$	$7.27 \pm .06$	0.8
pCO2	58 ± 7	57 ± 8	0.66
pO2	21.0 ± 5	21 ± 7	0.38
HCO3	23 ± 3	22 ± 3	0.05
Base excess	-0.6 ± 2.1	-1.0 ± 2.2	0.10
UV blood gases	N = 200	N = 193	
pH	$7.32 \pm .05$	$7.32 \pm .06$	0.89
pCO2	47 ± 6	47 ± 7	0.47
pO2	29 ± 9	29 ± 8	0.83
HCO3	22 ± 2	22 ± 2	0.06
Base excess	-1.6 ± 1.7	-1.9 ± 1.9	0.09
Apgar Score			
< 7 at 1min	5	3	0.72
< 7 at 5min	0	0	n/a
Neonatal Weight (g)	3421 ± 500	3402 ± 462	0.7
Non-routine Resuscitation (n)	6	12	0.15
Nausea/Vomiting (n)	1	4	0.21



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Limitations

- Retrospective study
- Patient positioning at discretion of providers

Conclusions

- For CD w/ spinal anesthesia, the standard practice in our institution is a prophylactic phenylephrine IVI and crystalloid coload to maintain maternal SBP at baseline
- A practice change occurred post-2016, of NOT tilting the surgical table routinely to left by 15 degrees during term, elective CD w/ spinal anesthesia. This did NOT impair neonatal acid-base status compared to a historical cohort when maternal tilt was routine
- Our data supports our shift in clinical practice, and that tilt during cesarean delivery with neuraxial anesthesia may not be routinely necessary

References

1. Lee et al., Anesthesia and Analgesia 2017;125(6):1975-1985.
2. Higuchi et al. , Anesthesiology 2015;122(2):286-93.
3. Lee et al. , Anesthesiology 2017;127(2):241-249.

