

Gastric emptying of water versus carbohydrate drink in early labor with epidural analgesia – A Randomized Controlled Trial

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Background

- Pulmonary aspiration remains a feared complication of obstetric anesthesia
- Gastric content volume is one of the main factors in pathophysiology of aspiration.
- Women in labor are allowed to drink small amount of clear liquids.
- We have limited precise information about gastric emptying time in women in active labor who have received labor epidural.
- By better defining this time, we may be able to provide evidence-based recommendations on consumption in early labor.

Methods

- Inclusion Criteria:
 - Gestational Age 36 weeks and above
 - ASA 2 or 3
 - Early labor with cervical dilation less than 6 cm
 - Singleton pregnancy
- Exclusion Criteria:
 - Recent food < 3hrs
 - Preeclampsia
 - On Magnesium Sulfate
 - Received narcotics within last 12 hrs
 - Diabetes Mellitus
 - Multiple gestation
 - Active Nausea or reflux symptoms

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Methods

- Women were randomized to either 100 ml of water or sports drink.
- Ultrasound measurements of cross-sectional area (CSA) of the gastric antrum were performed in supine position with 30° head elevation(Figure A) and right lateral position, immediately after 100 ml intake of water (Figure B) or carbohydrate drink and repeated every 20 min for 60 min.
- Patients were also asked to rate their hunger on a visual analogue scale every 20 min for 120 min.
- Data collection ended if the patient progressed to more than 6 cm cervical dilation.



Figure A: Before intake

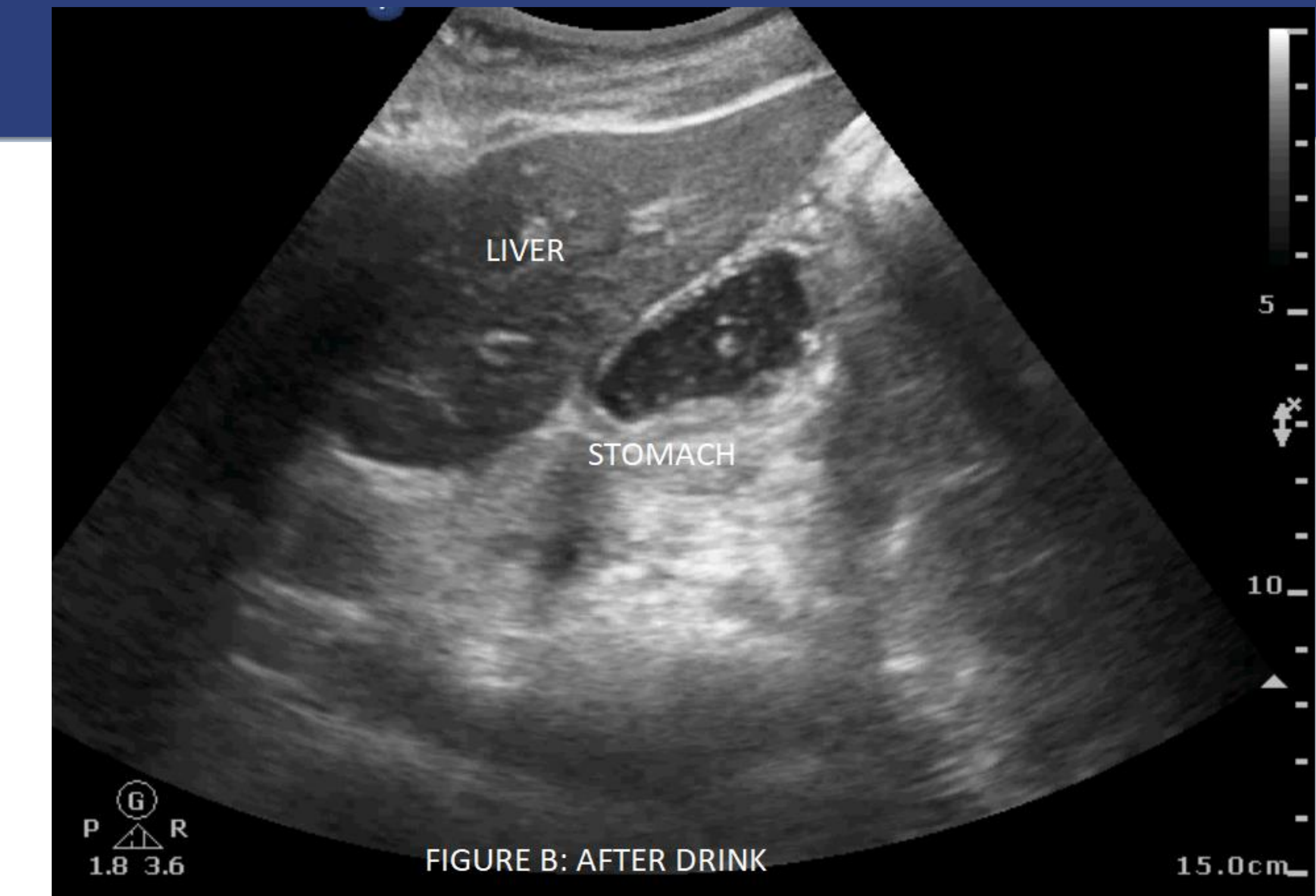


Figure B: After intake

Results

- 22 patients completed the study (12 Water; 10 Carb), with no difference between groups in age, BMI, gestational age and time since last ingestion. Two patients in water group progressed in labor rapidly and could not be examined after 20min; one in the Carb group had suboptimal images after 20min.

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Results

- The CSA increased by $7.9 \pm 3.2 \text{ cm}^2$ after ingestion (Figure C).
- Both volume curves were similar ($p=0.60$; Figure C).
- Half-life was similar: Water 18.7 ± 4.2 min v. Carb 15.3 ± 5.4 min, $p=0.62$.
- Gastric volumes at 40 minutes:
 - Within 20% of baseline
 - $<1.5 \text{ ml/kg}$.
- We found an increase in patient reported hunger scores over time ($P<0.001$) with no difference between water and sports drink ($P=0.91$; Figure D).

Conclusion

- Ingestion of 100 ml water or carbohydrate drink will be cleared by 40 min in both groups.
- There was no difference between water and carbohydrate drink in emptying times, residual volume and hunger scores.
- Ingestion of >100 ml per hour may be appropriate

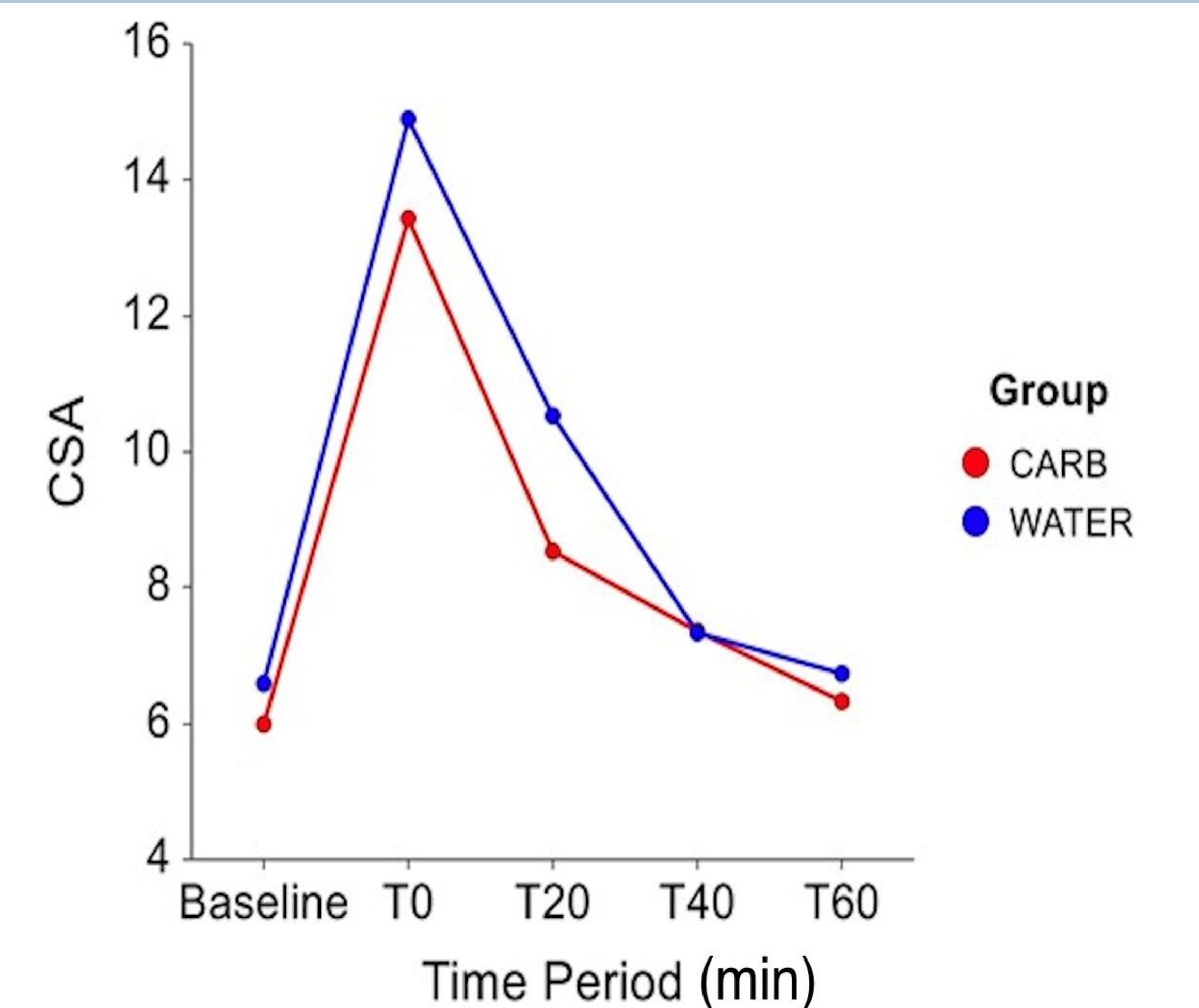


Figure C: Change in CSA over time

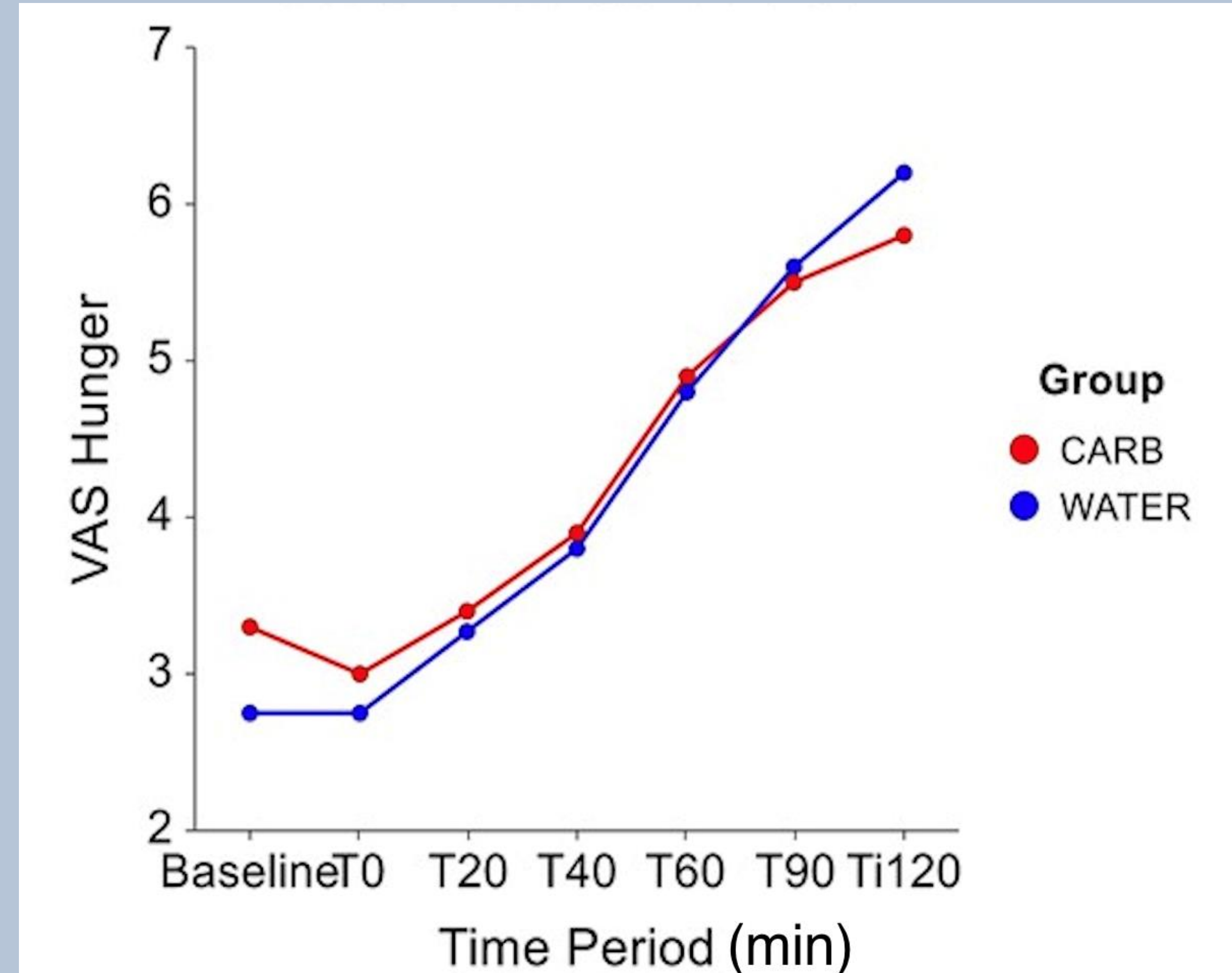


Figure D: Change in Hunger over time

References

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3. Anesthesia & Analgesia 2007, Volume 105 (3), p 751–755