Impact of nitrous oxide on parturient recall of neuraxial analgesia risks

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BACKGROUND

NITROUS OXIDE

- Gaining popularity in the US for labor analgesia
- Up to 40% of women will transition to neuraxial analgesia during labor[1]
- Nitrous oxide is known to affect memory and recall[2]

CLINICAL QUESTION

- Does nitrous oxide use during labor affect the ability to learn and recall the risks and benefits of neuraxial analgesia?
- **Are parturients able to provide consent for neuraxial analgesia after using nitrous oxide?**

METHODS

OBSERVATIONAL STUDY

- Nulliparous patients enrolled
- Parturients chose whether to use nitrous oxide or not
- Discussion of four risks (headache, infection, nerve damage, bleeding) occurred at the time of epidural request in both groups
- Labor pain score, time from nitrous discontinuation, and cervical dilation documented at the time of risk discussion

RISK RECALL ASSESSMENT

- Postpartum day 1 – free recall and cued recall (with distractors) of risks
- 6 weeks postpartum – free recall of risks
- Pearson's Chi-square test used to compare the number and proportion of patients who indicated each true risk (free and cued recall) or distractor (cued recall only)

FIGURE 1 – PPD1 FREE RECALL

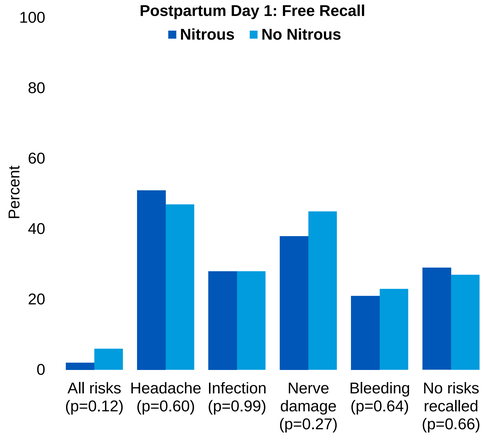

FIGURE 2 – 6 WK FREE RECALL

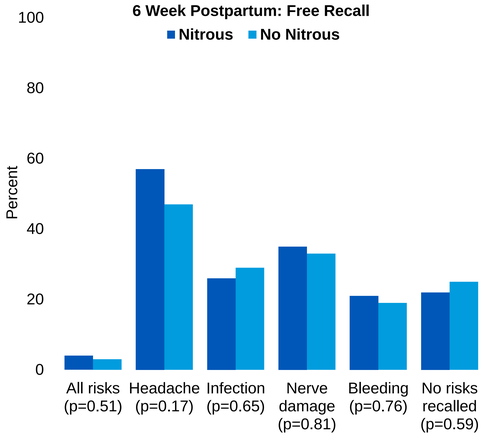

FIGURE 3 – PPD1 CUED RECALL

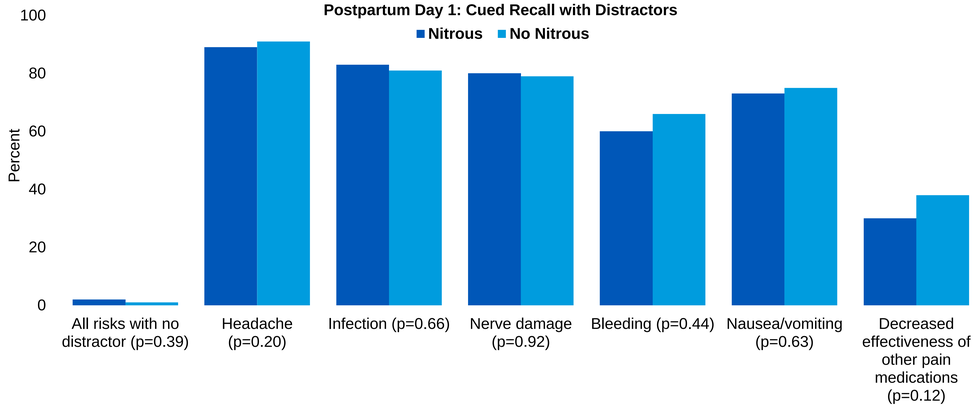

TABLE 1: DEMOGRAPHICS

	Nitrous (N=96)	No nitrous (N=224)	p value
Gestational age, weeks	39.9 (39.0, 40.7)	39.4 (38.6, 40.3)	0.04
Cervical dilation, cm	5 (4, 6)	5 (3, 6)	0.03
Labor VAS	10 (9, 10)	9 (8, 10)	0.03
BMI	31.1 (26.6, 35.4)	31.1 (26.9, 36.2)	0.75
Race			0.14
Caucasian	86 (90%)	195 (87%)	
African American	1 (1%)	5 (2%)	
Hispanic	3 (3%)	4 (2%)	
Asian/Pacific Islander	2 (2%)	17 (8%)	
Other	4 (4%)	3 (1%)	
Primary medical service			< 0.01
OB	39 (41%)	116 (52%)	
Midwife	47 (49%)	65 (29%)	
Family medicine	10 (10%)	43 (19%)	
Final mode of delivery			0.76
NSVD	61 (64%)	135 (60%)	
Cesarean	25 (26%)	70 (31%)	
Forceps assisted (FAVD)	8 (8%)	14 (6%)	
Vacuum assisted (VAVD)	2 (2%)	5 (2%)	
Satisfaction with pain relief from epidural/spinal during labor			0.78
Very satisfied	78 (84%)	188 (85%)	
Somewhat satisfied	9 (10%)	26 (12%)	
Neutral	2 (2%)	4 (2%)	
Somewhat dissatisfied	3 (3%)	2 (1%)	
Very dissatisfied	1 (1%)	2 (1%)	
Satisfaction with pain relief from nitrous during labor			
Very satisfied	8 (9%)		
Somewhat satisfied	23 (25%)		
Neutral	19 (20%)		
Somewhat dissatisfied	23 (25%)		
Very dissatisfied	20 (22%)		

RESULTS

NITROUS OXIDE USE

- 96 patients used nitrous oxide
- 224 patients used neuraxial analgesia (no nitrous)
- Group characteristics were similar (Table 1) except women who used nitrous oxide were more likely to be cared for by midwives, have a higher pain score, and have greater cervical dilation when requesting their epidural

RESULTS

RISK RECALL

- No difference in free recall of risks on PPD1 (Figure 1) and at 6 weeks postpartum (Figure 2)
- Only 2% and 6% in the nitrous and no nitrous groups, respectively, freely recalled all four risks (p=0.12)
- 29% and 27% in the nitrous and no nitrous groups, respectively, did not freely recall any of the four risks
- Headache was the most recalled risk of neuraxial analgesia at all time points.
- 47% of women who used nitrous prior to receiving an epidural were dissatisfied with pain relief from nitrous

DISCUSSION

- Nitrous oxide for labor analgesia does not influence a parturient's ability to understand or recall the risks of neuraxial analgesia
- Findings were consistent with prior studies showing an overall low rate of recall for epidural risks[3]
- **Patients who receive nitrous oxide for labor analgesia should still be considered eligible to provide consent for subsequent procedures**

REFERENCES

1. Richardson MG et al. Anesthesiol Clin. 2017;35:125-143.
2. Block RI et al. Psychopharmacology (Berl). 1988;96:324-331.
3. Burkle CM et al. J Clin Anesth. 2017;36:158-163.

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