Analysis of Adjuvant Medication Use During Cesarean Delivery Under Neuraxial Anesthesia

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Why This Matters

Up to 17% of patients experience intraoperative pain during C-section

No standardized IV adjuvant protocol

Practice varies across institutions

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Study Objectives

1. Quantify IV adjuvant medication use during CD under neuraxial anesthesia at a single academic center

2. Compare adjuvant administration rates across anesthesia types (epidural vs. spinal/CSE)

3. Characterize dexmedetomidine dosing patterns (anti-shivering vs. sedative range)

4. Identify patient, obstetric, and provider factors associated with adjuvant use

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Study Design

- Retrospective chart review of n = 716 cesarean deliveries from 2023
- Single academic center
- REDCap abstraction

Demographics

- Age
- BMI
- Race
- Language/interpreter needed

Clinical Variables

- Obstetric: labor status, prior CDs, preeclampsia, chorioamnionitis
- Anesthetic: epidural/spinal/CSE, sensory level, LA bolus
- Adjuvant: medication, dose, indication

Operative Variables

- Duration
- QBL
- Time of day
- Provider: CRNA/resident
- Neonatal: 1 & 5 min APGAR

Analysis Groups

- Adjuvant vs non-adjuvant
  - Dex ≥30 μg vs <30 μg

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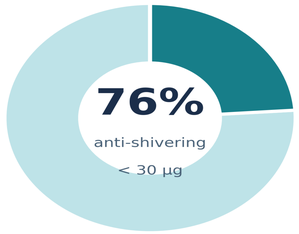
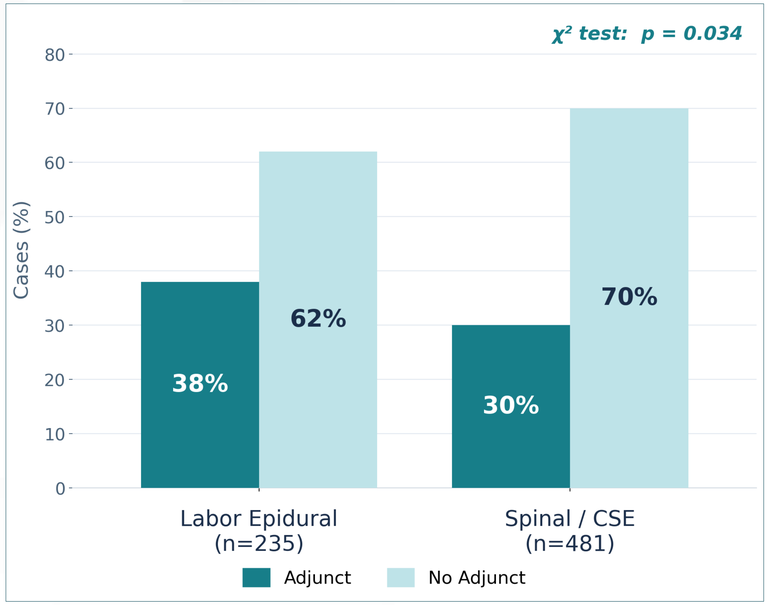
Key Findings



< 30 µg (n=54, 76.1%)
≥ 30 µg (n=17, 23.9%)

Dexmedetomidine Dosing Strategy

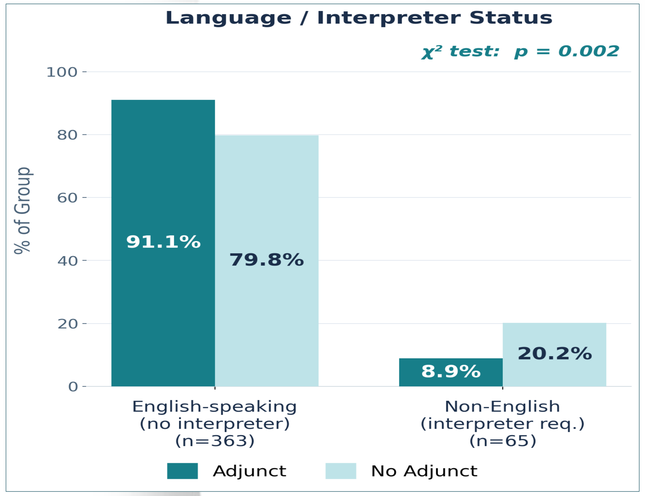


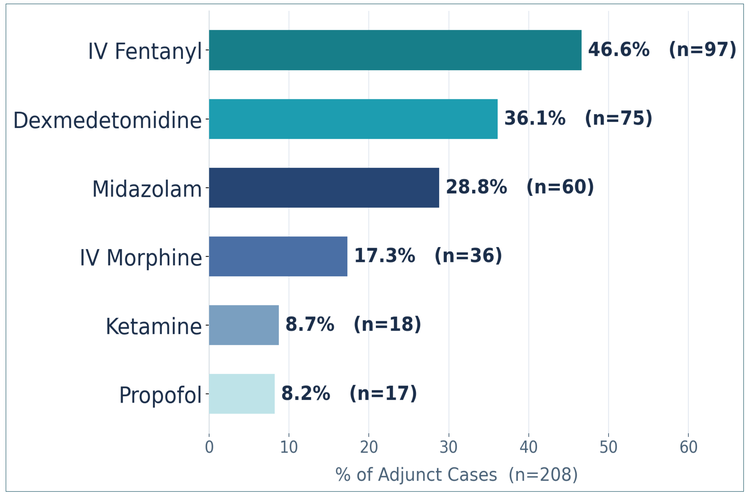
Non-Significant Variables: Adjunct vs. No Adjunct

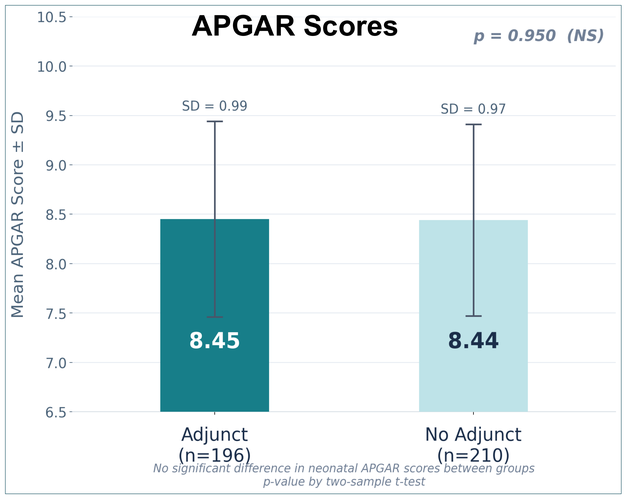
Full cohort N = 428 (Adjunct n=208, No Adjunct n=220) | All p > 0.05

Variable		Adjunct (n=208)	No Adjunct (n=220)	p-value
ASA Class	2	136 (48.4%)	145 (51.6%)	0.769
	3	66 (48.2%)	71 (51.8%)	
Labor Status	In Labor	79 (52.0%)	73 (48.0%)	0.330
	Not in Labor	128 (46.5%)	147 (53.5%)	
Urgency	Scheduled	83 (46.9%)	94 (53.1%)	0.814
	Unscheduled/Emergency	11 (52.4%)	10 (47.6%)	
In-Room Provider	CRNA	166 (48.4%)	177 (51.6%)	1.000
	Resident	40 (48.2%)	43 (51.8%)	
Attending	OB Anesthesia	118 (52.4%)	107 (47.6%)	0.114
	Non-OB	90 (44.3%)	113 (55.7%)	
Pre-eclampsia on Mg	Yes	43 (49.4%)	44 (50.6%)	0.958
	No	165 (48.4%)	176 (51.6%)	
Chorioamnionitis	Yes	18 (66.7%)	9 (33.3%)	0.079
	No	189 (47.2%)	211 (52.8%)	
Night Shift	Yes	40 (42.6%)	54 (57.4%)	0.258
	No	163 (49.8%)	164 (50.2%)	
BMI	Mean ± SD	36.5 ± 9.2	36.4 ± 8.7	0.857
Age	Mean ± SD	30.4 ± 6.2	30.2 ± 6.5	0.800
Surgical Duration	Mean ± SD (min)	72.3 ± 98.4	68.1 ± 91.0	0.657
QBL	Mean ± SD (mL)	846 ± 413	777 ± 418	0.089
Prior C-sections	Mean ± SD	1.00 ± 1.20	0.87 ± 1.07	0.248
Epidural Subset*	LA Bolus Count	2.40 ± 2.06	2.22 ± 1.84	0.603
	LA Bolus Amount (mL)	15.6 ± 4.4	16.3 ± 5.7	0.433
	Epidural Duration (h)	11.0 ± 7.7	9.56 ± 7.1	0.286

** Epidural subset: Adjunct n=67, No Adjunct n=59 | Continuous variables by two-sample t-test; categorical variables by chi-square*







No significant difference in neonatal APGAR scores between groups
p-value by two-sample t-test

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Conclusions

High Adjuvant Use: 33% of cesarean deliveries under neuraxial anesthesia required IV adjuvant medications, consistent with the ASA quality metric focus

Language Disparity: English-speaking patients were significantly more likely to receive adjuvant medications compared to non-English-speaking patients (91.1% vs. 79.8%, $p = 0.002$), suggesting potential language-related disparity in intraoperative pain management

Epidural > Spinal/CSE: Adjuvant use was higher in labor epidural cases (38%) vs. spinal/CSE (30%), $\chi^2 = 4.51$, $p = 0.034$, reflecting limitations of epidural conversion

Neonatal Safety: No significant difference in APGAR scores between groups (8.45 vs. 8.44, $p = 0.95$), supporting the safety profile of adjuvant use

Dexmedetomidine Dosing: Dex was predominantly used in anti-shivering doses (<30 μg, 76%), suggesting consistent non-sedative intent

Future Directions: Further research and standardization of adjuvant protocols are needed, particularly to address language-related disparities in intraoperative pain management

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