

Infant Apgar Scores After Labor Using Opioid Free Epidural Analgesia Compared to Opioid Epidural Analgesia

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Introduction

- In the U.S., opioid epidural labor analgesia (OLEA) is used in most births (1).
- Deaths from opioid overdose in women have increased by 400% from 1999-2010 and the incidence of neonatal opioid withdrawal syndrome has increased five-fold among infants covered by Medicaid in 46 States (2).
- Epidural opioids adversely affect mothers and opioid use disorder (OUD) has been associated with poor maternal and neonatal outcomes in the U.S. (3).
- We tested whether OFLEA improves infant outcomes by measuring Apgar scores two timepoints after labor.

Materials and Methods

The two cohorts received epidural solutions of continuous 0.1% Ropivacaine + 250 mcg Fentanyl (OLEA) or 0.2% Ropivacaine (OFLEA). We began with 1423 patients. After removing patients with twin deliveries, duplicated in both groups, and those with extreme missing values, the total number of patients was 1346. After matching 1:1 on the mother’s age, the final sample size was 618 patients. A non-parametric Wilcoxon two-sample was used to assess infant Apgar scores 1 minute and 5 minutes after delivery.

Table 1.

Variables	Mean (SD)		P-value
	OLEA	OFLEA	
Infant Apgar score 1 min after delivery	7.896 (1.29)	7.819 (1.26)	0.0892
Infant Apgar score 5 min after delivery	8.760 (1.16)	8.743 (1.174)	0.5784

1. P-values come from nonparametric Wilcoxon two-sample test since the data points do not follow normality assumptions.
2. Since none of the p-values are statistically significant on a 0.05 level, we do not fit regression models.

Results

Infant Apgar scores both 1 minute and 5 minutes after delivery were not statistically different between the OLEA and OFLEA groups. The Apgar score 1 minute after delivery in the OLEA group was 7.896 ± 1.29 versus 7.819 ± 1.26 in the OFLEA group (P=0.0892). The Apgar score 5 minutes after delivery in the OLEA group was 8.760 ± 1.16 versus 8.743 ± 1.174 in the OFLEA group (P=0.5784) (Table 1). We failed to reject the hypothesis that using OFLEA improves infant Apgar scores both 1 and 5 minutes after delivery in comparison with OLEA.

Discussion

Our results suggest that OFLEA does not improve infant outcomes via Apgar scores after delivery compared to OLEA. While OLEA has been associated with an increased risk of adverse events during labor, the avoidance of opioid analgesia is a potential future avenue for obstetric anesthesia as healthcare re-examines its relationship with opioids. The use of OFLEA may help avoid side effects such as withdrawal and overdose of the infant. Studies further investigating the potential differences between the two treatment options are necessary to determine the true impacts of OFLEA on infant outcomes.

References

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