

Case Failure Rate Of Spinal Anesthesia and Combined Spinal-Epidurals In The Super Morbidly Obese Population

Safir Abbas, Haley Hodgins, Alexandria Lehrmann, James Lane, Kristine Lane, Allison Mullins MD, Rovnat Babazade MD
University of Texas Medical Branch, Galveston, TX USA

Introduction

- Spinals and Combined Spinal-Epidurals are two common modalities for administering obstetric anesthesia with notable differences in technique^{1,2}
- The differences in technical challenge between the two procedures may result in significant differences in procedure duration, redirections, and other indicators of increased attempt failure that can place patients at heightened procedural risk and greater discomfort
 - This difference may be especially pronounced in the super morbidly obese population, where body habitus can prove especially challenging for obtaining spinal access
- The purpose of this abstract is to investigate differences in failure rates between spinal and CSE anesthesia in the super morbidly obese population

Materials and Methods

- Conducted a retrospective chart review from a single institution, and collected patient data from the electronic medical record with IRB Approval
- Inclusion criteria was BMI ≥ 50.0 kg/m², patients aged 16 to 50 admitted for delivery of a viable fetus between 2015 and 2021 with a documented anesthesia encounter

Results

- Significant difference in average procedure duration (CSE 26 min vs Spinal 17 min respectively, $p=0.017$)
- CSE had higher average rates of re-attempts, number of redirections, faculty intervention, and conversion to GA vs Spinal
- Significant difference in total phenylephrine administered during procedure (CSE 2141 mg vs Spinal 974.73 mg, $p < 0.05$)
- Higher average amount of fentanyl and lower average amount of morphine administered in CSE vs. spinal

Anesthetic Administered		Spinal	CSE	Statistical Comparison
Sample Size		108	118	
Maternal Demographics	Maternal Age (years)	29.33 (SD 5.6)	30.21 (SD 5.48)	
	Maternal BMI (kg/m ²)	54.69 (SD 4.24)	57.22 (SD 6.9)	
Anesthetic Placement Information	Number of Attempts	1.5 (SD 0.97), n=71	1.66 (SD 1.26), n=91	t = -0.818, p-value= 0.41
	Number of Redirections	0.31 (SD 0.72), n=61	0.66 (SD 1.65), n=65	t = -1.051, p-value= 0.30
	Time for Anesthesia Placement (min)	16.76 (SD 12.67), n=93	21.58 (SD 16.68), n=109	t = -2.39, p-value= 0.017
Anesthesia Medication Information	Total Phenylephrine administered (mcg)	974.73 (SD 1496.89), n=106	2141.4 (SD 2350), n=117	t = -4.23, p-value= 0.00033
	Total Morphine administered (mg)	2.03 (SD 14.55), n=107	1.92 (SD 13.79), n=118	t = 0.06, p-value= 0.949
	Total Fentanyl Given (mcg)	36.08 (SD 65.79), n=106	44.33 (SD 13.80), n=118	t = -0.903, p-value= 0.367
Anesthesia Failure Statistics	Faculty Intervention Required	12.62%, n=103	13.64%, n=110	chi^2= 0.048, p-value= 0.827
	Ultrasound Guidance Required	0%, n=104	1.71%, n=117	
	Replacement or Conversion to GA	2.88%, n=104	5.98%, n=117	chi^2= 1.223, p-value= 0.269

Discussion

- Significantly higher procedure placement time seen with CSE support the concern that there is increased complexity compared to spinal anesthesia
 - Non-significant, higher rates of re-attempts, redirections, instances of faculty intervention, and rates of conversion to GA warrant further investigation
- Significantly higher total amount of phenylephrine and non-significantly higher doses of fentanyl administered in the CSE group
- Areas of focus for follow-up investigation
 - Explore failure rates after stratifying the data
 - Based on BMI groups
 - Other vital signs/demographic data
 - May reveal other variables that affect the case failure rate of neuraxial anesthesia placement.
- Goal of optimizing individualized patient care
 - Identify clinical data that correlates to greater success with certain procedures
 - Deliver least complicated and most efficient procedure that achieves therapeutic effect for patient