

General Anesthesia in Super Obese Parturients for Labor and Delivery, a Retrospective Study of a Single Institution

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Introduction

- Super obese patients, with a BMI greater than or equal to 50, are high risk obstetric with have a higher percentage of cesarean sections (CS) deliveries (1)
- General anesthesia (GA) for CS is typically reserved for emergent circumstances, only 7% of cases when there is not enough time for adequate neuraxial coverage (2)
- The purpose of this abstract was to review encounters when GA was used for super obese laborers

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 a BMI ≥ 50.0 kg/m², aged 16 to 50, and admitted for delivery of a viable fetus between 2015 and 2021 with a documented anesthesia encounter
- We reviewed 342 patient encounters, 282 of which had a cesarean section (CS) delivery
 - 19 of the CS patients had general anesthesia used in their care

1. Hartge, David et al. "Maternal super-obesity." Archives of gynecology and obstetrics vol. 293,5 (2016): 987-92. doi:10.1007/s00404-015-3921-9
2. Rajagopalan, S et al. "Airway management for cesarean delivery performed under general anesthesia." International journal of obstetric anesthesia vol. 29 (2017): 64-69. doi:10.1016/j.ijoa.2016.10.007

Results

- Of the 19 patients who had general anesthesia
 - 6 of the patients had attempted combined spinal epidurals (CSE)’s
 - 3 of the patients had attempted spinals
 - 2 of the patients had attempted epidurals that were unsuccessful
- 36.8% were considered emergent (category 1)
- 36.8% urgent (category 2 and 3)
- All 5 of the elective (category 4) CS required a conversion to GA after previous failed neuraxial central blocks.
- 4 of the 19 records did not have a procedure note documenting the intubation
- All the encounters with procedure notes had a successful intubation on first attempt.
- Two patients delivered twins
- One patient was currently admitted to the ICU for a suspected infection when she had cardiac arrest and an emergent peri-mortem CS delivery

Table 1. Super Obese Patiurents Who Received General Anesthesia During Delivery			19
Patient Sample Size			
Maternal BMI (kg/m^2)	Mean	54.98	
	Standard Deviation	3.39	
	Highest Value	61.79	
	Lowest Value	50.22	
Maternal Age (years)	Mean	26.47	
	Standard Deviation	5.52	
Gestational Age at Delivery (n)	Moderate and Early Preterm, <34 weeks	5	
	Late Preterm, >=34 and <37 weeks	6	
	Early Term, >=37 and <39 weeks	5	
	Full Term, >=39 and <41 weeks	3	
Delivery Methods (n)	Vaginal Delivery	0	
	C-Section Delivery	19	
Grade Definition of CS Urgency (n)	Category 1 – Immediate threat to life	7	
	Category 2 – Maternal or fetal compromise	4	
	Category 3 – Needing early delivery	3	
	Category 4 – At a time to suit the woman and team	5	
Maternal Comorbidities (%)	Gestational Hypertension (%)	31.58%	
	Preexisting Hypertension (%)	47.37%	
	Diabetes (%)	31.58%	
	Obstructive Sleep Apnea (%)	5.26%	
	GERD (%)	31.58%	
	Smoking History (%)	36.84%	
	Substance Abuse (%)	15.79%	
Anesthetic Technique (n)	Planned CSE	6	
	Planned Spinal	3	
	Planned Epidural	2	
	Did not attempt another anesthetic before GA	8	
Mallampati Score (n)	1	3	
	2	2	
	3	11	
	4	2	
Intubation (n)	Cuffed ETT Placed (n)	15	
	Video Laryngoscopy Used (n)	12	
	Cricoid Pressure Used	7	
	Stylet Used	14	
	Arterial Line Used	3	
	Central Line Used	1	
	Successful Intubated	19	
Anesthesia Medications	Phenylephrine (mcgs), (n) charts used	1089.25 (SD 2621.56), 12 charts	
	Morphine (mg), (n) charts used	4.47 (SD 3.18), 15 charts	
	Fentanyl (mcg), (n) charts used	190.93 (SD 110.77), 16 charts	
	Propofol (mg), (n) charts used	412.96 (SD 408.55), 18 charts	
	Ketamine (mg), (n) charts used	27.5 (SD 31.82), 2 charts	
	Midazolam (mg), (n) charts used	2 (SD 0), 6 charts	
	Succinylcholine (mg), (n) charts used	130.56 (SD 35.38), 18 charts	
	Rocuronium (mg), (n) charts used	57.50 (SD 4272), 4 charts	
	Ondansetron (mg), (n) charts used	4.33 (SD 1.15), 12 charts	
Maternal Outcomes	Admitted to ICU (%)	10.53%	
	Post-Operative Mortality Within 2 Months (%)	5.26%	
	Post-Operative Infection (%)	21.05%	
	Post Dural Puncture Headache (%)	5.26%	
	Total Length of Hospital Stay (hours)	122.82 (SD 130.21)	
	Estimated Blood Loss (mL)	1105.26 (SD 560.23)	
Neonatal Outcomes	Birth Weight (grams)	2973.52 (SD 951.48)	
	APGAR 1 Minute	6.81 (SD 1.94)	
	APGAR 5 Minute	8.43 (SD 0.93)	

*One patient was admitted to L&D already intubated from outside hospital

Discussion

- Only 6.7 % of reviewed patients with CS received GA
- 88.9% of conversions with complete procedure notes documenting the use of video laryngoscopy.

We also saw inconsistent medication management and induction techniques

- Only 46.7% of charts documented using cricoid pressure, even though it is part of the rapid sequence induction protocol
- The medications most commonly charted were Propofol (100%), Succinylcholine (100%), Fentanyl (88.9%), Morphine (83.3%), Ondansetron (66.7%) and Phenylephrine (66.7%)

Neonatal APGAR scores for mothers who were given GA and IV anesthetics had lower averages but were not significantly different than the APGARs of the overall observed obese patient population