

Anesthesia outcomes and opioid use in patients with a diagnosis of opioid use disorder: a retrospective cohort study (2020-2024)

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Background

- Management of peripartum pain in patients with opioid use disorder (OUD), with methadone or buprenorphine for medication-assisted therapy (MAT), prescribed opioids for chronic pain, or illicit opioid and polysubstance use, is challenging.¹
- Evidence suggests superior outcomes when buprenorphine is used, though postpartum analgesia may be challenging. There is less data to suggest strategies for patients with OUD not on MAT.
- Though our center is not a referral center for OUD management, we have a standardized protocol to minimize withdrawal, pain, and opioid relapse, which includes neuraxial clonidine and epidural morphine dosing for 48-72 hours post-delivery.



Hypothesis

Patients with a diagnosis of OUD but not on MAT have higher peripartum opioid use and more adverse obstetric and anesthesia outcomes.

Methods

Searching for OUD and cross-referencing for substance use disorder, all OUD cases since 2/2020 were identified in EPIC.

Data was extracted from EMR into RedCap:

- Opioid use during pregnancy
- Opioid use at the time of delivery & postpartum (MAT, systemic MME, neuraxial opioids).
- Demographic data
- Obstetric data (including mode of delivery, gestational age at delivery, PPH)
- Anesthetic data:
 - Neuraxial analgesia
 - Neuraxial anesthesia
 - IV supplementation
 - General anesthesia

- N=27,586 deliveries
- N=94 cases with OUD (0.34%)
- Most cases were patients with non-prescribed (illicit) opioids and a positive urinary toxicology screening upon admission (n=52)
 - 27 previously on MAT but not consistently during this pregnancy
- Among patients on MAT
 - 18 on methadone (30-140mg)
 - 10 on buprenorphine (4-24mg).
- Cases with prescribed opioids for pain (n=14).

	MAT maintenance Methadone (n=18)	MAT maintenance Buprenorphine (n=10)	Non-prescribed (illicit) opioid use (n=52)		Prescribed opioids for pain (n=14)	P value
			Buprenorphine and methadone naïve (n=25)	Prior use of methadone and/or buprenorphine (n=27)		
Maternal demographics						
Age (years)	31 ± 4.4	32 ± 2.1	31 ± 5.8	32 ± 4.7	33 ± 5.4	0.7
BMI (kg/m ²)	32.5 ± 6.1	33.4 ± 4.4	30.7 ± 7.7	31.0 ± 7.2	31.0 ± 7.6	0.5
Race						0.07
Black, n=12	0 (0%)	4 (40%)	2 (8%)	5 (18.5%)	1 (7.1%)	
White, n=32	10 (55.6%)	1 (10%)	9 (36%)	6 (22.2%)	6 (42.9%)	
Other, n=44	8 (44.4%)	5 (50%)	12 (48%)	14 (51.9%)	5 (35.7%)	
Unknown, n=6	0 (0%)	0 (0%)	2 (8%)	2 (7.4%)	2 (14.3%)	0.8
Ethnicity						
Hispanic, n=71	14 (77.8%)	8 (80%)	20 (80%)	20 (74.1%)	9 (64.3%)	
Non-Hispanic, n=22	4 (22.2%)	2 (20%)	4 (16%)	7 (25.9%)	5 (35.7%)	
Unknown, n=1	0 (0%)	0 (0%)	1 (4%)	0 (0%)	0 (0%)	
Opioid use status at time of delivery						
Utox+ for nonprescribed opioid/cocaine/BZD, n	7 (38.9%)	0 (0%)	9 (36%)	15 (55.6%)	0 (0%)	0.0003*
OUD remission (>9m), n	7 (38.9%)	7 (70%)	6 (24%)	6 (22.2%)	NA	0.03*
Obstetric outcomes and mode of delivery						
Gestational age at delivery (weeks + days)	36 + 6 ± 29	39 + 0 ± 6	36 + 5 ± 15	37 + 0 ± 21	37 + 5 ± 11	0.1
Induction of labor, n	6 (33.3%)	7 (70%)	6 (24%)	5 (18.5%)	6 (42.9%)	0.04*
Preterm labor, n	4 (22.2%)	0 (0%)	11 (44%)	6 (22.2%)	3 (21.4%)	0.08

Results - demographics

High cesarean delivery rate (59%)

- Over 30% of emergent cases for fetal heart rate issues (associated with positive urinary toxicology screening)
- Prolonged use of PIEB/epidural morphine
- 48% IV supplementation
- 20% general anesthesia (for emergencies & intraoperative pain).
- No difference in LOS
- High NICU admission (lowest with buprenorphine)

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Cesarean delivery, n=55 (59%)	9 (50%)	5 (50%)	12 (48%)	17 (63%)	12 (85.7%)	0.16
Planned, n=20/55 (36%)	3/9 (33.3%)	3/5 (60%)	3/12 (25%)	5/17 (29.4%)	6/12 (50%)	0.4
Intrapartum (urgent / emergent), n=16/55 (29%)	3/9 (33.3%)	2/5 (40%)	2/12 (16.7%)	5/17 (29.4%)	4/12 (33.3%)	
Urgent / emergent (not intrapartum), n=19/55 (35%)	3/9 (33.3%)	0/5 (0%)	7/12 (58.3%)	7/17 (41.2%)	2/12 (16.7%)	
Postpartum hemorrhage, n (%)	4 (22.2%)	2 (20%)	5 (20%)	3 (11.1%)	3 (21.4%)	0.8
Length of hospital stay (hours)	109 ± 64.9	104 ± 43.3	87 ± 39.6	101 ± 61.8	141 ± 114.6	
Anesthesia modality and pain management						
Neuraxial labor analgesia, n=44 (47%)	10 (55.6%)	7 (70%)	10 (40%)	11 (40.7%)	6 (42.9%)	0.5
Intrapartum epidural used for cesarean, n=16/55 (29%)	3/9 (33.3%)	2/5 (40%)	2/12 (16.7%)	5/17 (29.4%)	4/12 (33.3%)	0.4
Spinal (in OR) for cesarean (clonidine 30-60mcg), n=14/55 (25%)	2/9 (22.2%)	0/5 (0%)	6/12 (50%)	5/17 (29.4%)	1/12 (8.3%)	
CSE (in OR) for cesarean, n=22/55 (40%)	4/9 (44.4%)	3/5 (60%)	4/12 (33.3%)	4/17 (23.5%)	7/12 (58.3%)	
General anesthesia for cesarean, n=11/55 (20%)	2/9 (22.2%)	0/5 (0%)	1/12 (8.3%)	5/17 (29.4%)	3/12 (25%)	0.5
IV analgesic supplementation for cesarean, n=21/44 (48%)	5/7 (71.4%)	3/5 (60%)	6/11 (54.5%)	3/12 (25%)	5/9 (55.6%)	
Epidural morphine	1 dose, n	1 (10%)	3 (12%)	3 (11.1%)	7 (50%)	0.3
2 doses, n	3 (16.7%)	2 (20%)	0 (0%)	1 (3.7%)	1 (7.1%)	
3 doses, n	3 (16.7%)	1 (10%)	1 (4%)	2 (7.4%)	2 (14.3%)	
>3 doses, n	0 (0%)	1 (10%)	0 (0%)	2 (7.4%)	0 (0%)	
Prolonged epidural use (PIEB/PCEA) postdelivery, n	4 (22.2%)	3 (30%)	2 (8%)	4 (14.8%)	5 (35.7%)	0.2
Systemic opioid use not including MAT post-cesarean (MME) ^a	9.5 ± 9.3	29.6 ± 20.3	32.2 ± 22.8	66.8 ± 102.1	104.6 ± 167.2	
Systemic opioid use including MAT post-cesarean (MME) ^a	395.1 ± 153.7	268.6 ± 260.1	32.2 ± 22.8	66.8 ± 102.1	104.6 ± 167.2	
Gabapentin post-cesarean delivery, n=10/55 (18%)	2/9 (22.2%)	2/5 (40%)	2/12 (16.7%)	3/17 (17.6%)	1/12 (8.3%)	0.6
Nalbuphine, n (%)	0 (0%)	1 (10%)	5 (20%)	2 (7.4%)	5 (35.7%)	0.03
Neonatal outcomes						
NICU admission, n (%)	12 (66.7%)	1 (10%)	8 (32%)	17 (63%)	5 (35.7%)	0.007

Data presented as mean ± standard deviation,

^a adjusted to length of hospital stay

Results - outcomes

- Contrary to our expectations, few patients were maintained on buprenorphine (10.7%)
- There was a significant proportion of OUD patients with illicit drug use at the time of delivery (33% with unexpected positive Utox), of which half had previously been on MAT
- The cesarean delivery rate was high (59%), and the general anesthesia rate was 10 times greater than our usual rate (20% vs 2.5%)
- Raising awareness that patients with OUD are at higher risk for emergent cesarean delivery under general anesthesia for fetal issues and insufficient neuraxial anesthesia is key to improving peripartum care and reducing avoidable general anesthetics.

Discussion