

The Effect of Chorioamnionitis on Labor Analgesia

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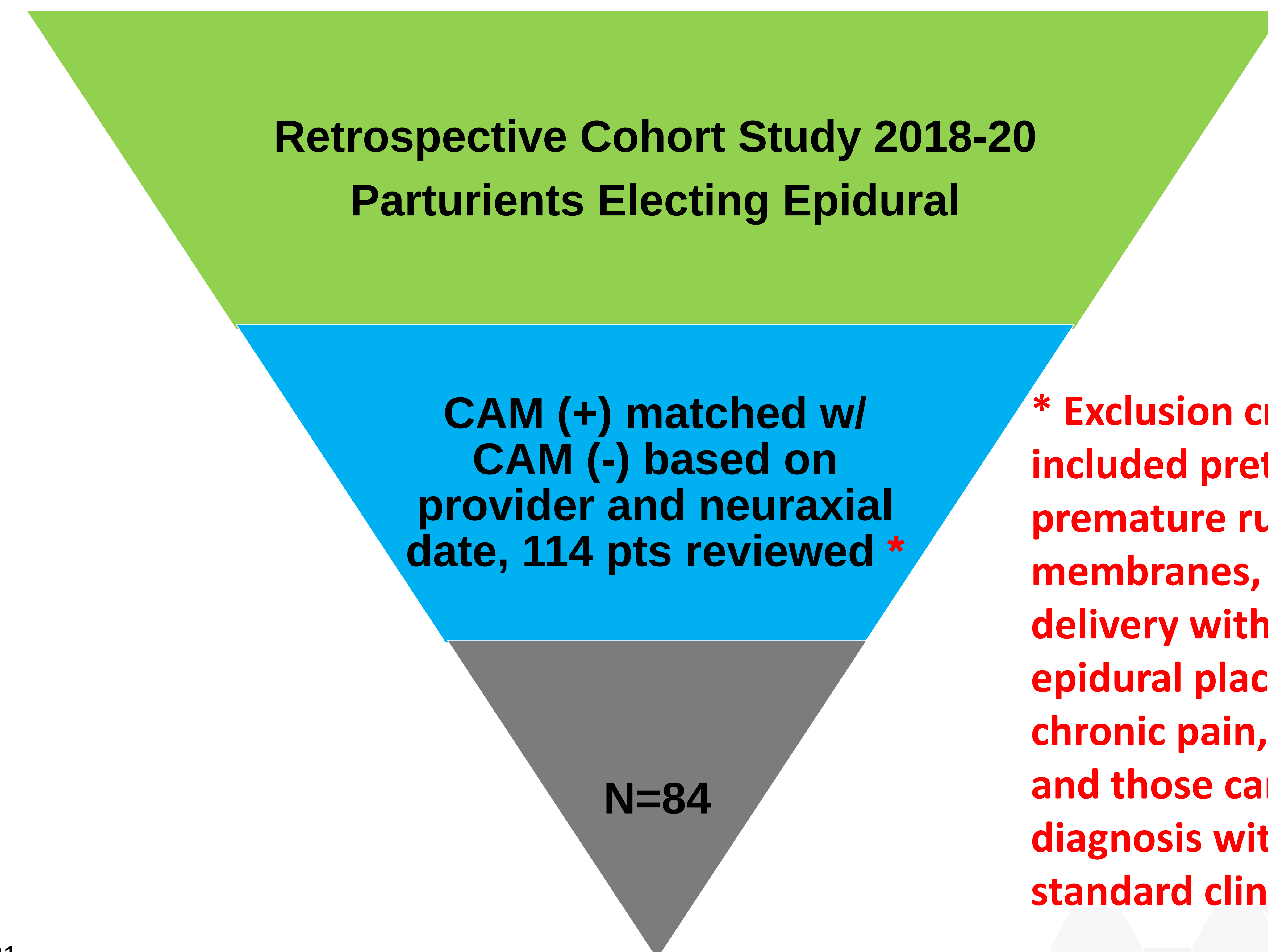
Introduction

- Chorioamnionitis (CAM) is associated with numerous delivery outcomes including longer labor times and a higher incidence of cesarean delivery¹.
- 70% of parturients elect to receive epidural labor analgesia, and therefore it is important to establish the functionality of epidural catheters when chorioamnionitis is suspected; catheter election ratio is reported 8:1².
- An association between chorioamnionitis and failed conversion of labor epidural analgesia for cesarean delivery has previously been reported³.
- We therefore sought to determine if parturients diagnosed with chorioamnionitis were more likely to require anesthesia provider epidural top offs during labor to achieve adequate analgesia.
- The primary outcome was to determine if CAM+ patients required more anesthesiologist intervention and top offs to achieve adequate analgesia compared to the CAM- group.
- Multivariable logistic regression was performed. Outcomes were estimated along with crude and adjusted odds ratios with 95% confidence intervals.

References

1. Jia L et al. Evaluation of Epidural Analgesia Use During Labor and Infection in Full-term Neonates Delivered Vaginally 2021
2. Abramovici A et al. Epidural use and clinical chorioamnionitis among women who delivered vaginally 2014
3. Katakura Y et al. Association of chorioamnionitis with failed conversion of epidural labor analgesia to cesarean delivery anesthesia: A retrospective cohort study 2021

Methods



*** Exclusion criteria included preterm labor, premature rupture of membranes, cesarean delivery within 2 hours of epidural placement, chronic pain, opioid abuse, and those carrying a CAM+ diagnosis without meeting standard clinical criteria.**

Study Results

Table 1. Patient demographics and clinical characteristics by chorioamnionitis status				
	Sample (N=84)	CAM+ (N=30)	CAM- (N=54)	P Value
Maternal age (yrs), mean (SD)	29.1 (5.2)	27.7 (4.9)	29.9 (5.2)	0.060
Maternal age $\geq$ 35 yrs, n (%)	12 (14.3)	4 (13.3)	8 (14.8)	0.853
Race, n (%)				0.007
Black	31 (36.9)	8 (26.7)	23 (42.6)	
White	41 (48.8)	13 (43.3)	28 (51.9)	
Asian	5 (6.0)	5 (16.7)	0 (0)	
Hispanic	6 (7.1)	3 (10.0)	3 (5.6)	
Other	1 (1.2)	1 (3.3)	0 (0)	
Parous women, n (%)	29 (34.5)	3 (10.0)	26 (48.1)	<0.001
Gestational age (wks), mean (SD)	39.3 (1.0)	39.5 (1.0)	39.3 (0.9)	0.392
BMI, median (IQR)	29.4 (25.5 - 33.1)	28.1 (25.1 - 31.6)	29.7 (25.8 - 34.5)	0.430
BMI $\geq$ 25, n (%)	70 (83.3)	25 (83.3)	45 (83.3)	1.000
Smoker, n (%)	12 (14.3)	1 (3.3)	11 (20.4)	0.048
GBS+, n (%)	13 (15.5)	2 (6.7)	11 (20.4)	0.123
Diabetes, n (%)	6 (7.1)	4 (13.3)	2 (3.7)	0.180
Hypertension, n (%)	13 (15.5)	4 (13.3)	9 (16.7)	0.763
Abbreviations: CAM: Chorioamnionitis; BMI: Body mass index; GBS: Group B Streptococcus; SD: Standard deviation; IQR: Interquartile range				

Table 2. Labor and delivery by chorioamnionitis status				
	Sample (N=84)	CAM+ (N=30)	CAM- (N=54)	P Value
Induction technique of labor analgesia, n (%)				0.807
CSE	10 (11.9)	4 (13.3)	6 (11.1)	
DPE	28 (33.3)	11 (36.7)	17 (31.5)	
EPI	46 (54.8)	15 (50.0)	31 (57.4)	
Duration of labor analgesia (hrs), median (IQR)	9.9 (5.3 - 16.6)	17.5 (12.1 - 21.3)	8.1 (3.6 - 12.7)	<0.001
Duration of labor analgesia, n (%)				<0.001
< 10 hrs	42 (50.0)	6 (20.0)	36 (66.7)	
10 $\leq$ hrs < 20	33 (39.3)	16 (53.3)	17 (31.5)	
20 $\leq$ hrs < 30	8 (9.5)	7 (23.3)	1 (1.9)	
30 $\leq$ hrs < 40	1 (1.2)	1 (3.33)	0 (0)	
Mode of delivery, n (%)				<0.001
Cesarean delivery	27 (32.1)	18 (60.0)	9 (16.7)	
Spontaneous vaginal delivery	57 (67.9)	12 (40.0)	45 (83.3)	
Operation time (min), median (IQR)*	28 (23 - 34)	29 (23 - 36)	25 (23 - 34)	0.559
*For patients who underwent cesarean delivery only				
Abbreviations: CAM: Chorioamnionitis; CSE: Combined spinal-epidural; DPE: Dural puncture epidural; EPI: Epidural; IQR: Interquartile range				



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Results Cont'd

- There was no difference in the need for an anesthesia provider top off or time to top off request between groups.
- Among patients requiring anesthesia provider top offs, the CAM+ group was more likely to receive a higher total number of boluses (p 0.007) with 71.4% of CAM- patients receiving only one additional bolus in comparison to 15.4% in the CAM+ group.
- The CAM+ group received a higher total dose of fentanyl (P 0.012)** and local anesthetic.
- There were no failures to convert epidural labor analgesia for cesarean delivery in either group.

Table 3. Odds ratios for additional bolus of anesthetic (epidural top-off) during labor

	CAM+ (N=30)	CAM- (N=54)	Crude OR (95% CI)	Adjusted OR* (95% CI)
Additional bolus (CAM+ vs. CAM-)	13 (43.3)	21 (38.9)	1.20 (0.49 - 2.97)	1.10 (0.40 - 3.01)

*Covariates for maternal age, race (black/white/other), and parous (yes/no)

Abbreviations: CAM: Chorioamnionitis; OR: Odds ratio; CI: Confidence interval

Table 4. Summary of additional anesthesia among patients who received an epidural top-off during labor

	Sample (N=34)	CAM+ (N=13)	CAM- (N=21)	P Value
Number of additional boluses, n (%)				0.007
1	17/34 (50.0)	2/13 (15.4)	15/21 (71.4)	
2	11/34 (32.4)	6/13 (46.2)	5/21 (23.8)	
3	3/34 (8.8)	3/13 (23.1)	0/21 (0)	
4	3/34 (8.8)	2/13 (15.4)	1/21 (4.8)	
Time to additional bolus (hrs), median (IQR)	7.2 (3.9 - 10.1)	6.1 (4.5 - 8.6)	7.4 (3.6 - 10.4)	0.699
Additional bolus medication, n (%)				
Fentanyl	23/34 (67.6)	10/13 (76.9)	13/21 (61.9)	0.363
Fentanyl dose (mcg), median (IQR)	100 (100 - 100)	150 (100 - 300)	100 (100 - 100)	0.012
Bupivacaine 0.125%	19/34 (55.9)	9/13 (69.2)	10/21 (47.6)	0.217
Bupivacaine 0.125% dose (mL), median (IQR)	10 (8 - 11)	10 (10 - 11)	9 (7 - 10)	0.154
Bupivacaine 0.25%	25/34 (73.5)	10/13 (76.9)	15/21 (71.4)	0.724
Bupivacaine 0.25% dose (mL), median (IQR)	5 (5 - 12)	12 (5 - 16)	5 (5 - 8)	0.106

Abbreviations: CAM: Chorioamnionitis; IQR: Interquartile range