Title

Maternal Serum miRNAs as Biomarkers for Abnormal Placentation

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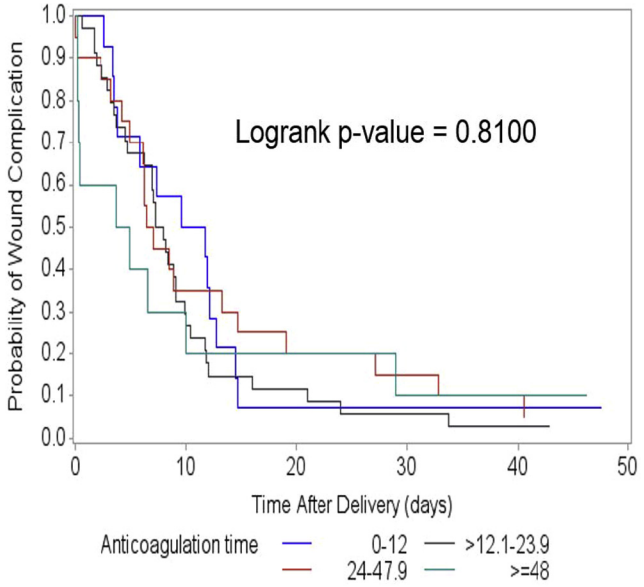
Table. Baseline pregnancy characteristics in patients who received ppx anticoagulation postpartum

	Wound complications (N=78)	No wound complications (N=1922)
Maternal demographics and characteristics		
Maternal age	28.9 ± 6.5	28.7 ± 6.3
Maternal BMI pre-pregnancy	38.1 ± 11.3	39.8 ± 11.1
Gestational age at delivery	34.4 ± 4.5	35.8 ± 4.7
Anticoagulation Antepartum	26 (33.3)	213 (11.1)
Nulliparity	34 (43.6)	682 (35.5)
Delivery EBL (mL), median (IQR)	800.0 (700.0-1000.0)	700.0 (350.0-900.0)
Mode of delivery		
Vaginal delivery	1 (1.3)	655 (34.1)
Cesarean delivery	77 (98.7)	1267 (65.9)
Maternal race		
Black	47 (60.3)	1194 (62.11)
White	27 (34.6)	551 (28.7)
Hispanic	2 (2.6)	131 (6.8)
Other	2 (2.6)	46 (2.4)
Chronic medical conditions		
Chronic hypertension	22 (28.2)	543 (28.3)
Pregestational diabetes	13 (16.7)	202 (10.5)
Pregnancy-associated medical conditions		
Preeclampsia	49 (62.8)	831 (43.2)

[a] Data presented as n (%) and mean ± SD unless stated otherwise

[b] p-values for each demographic were <0.001 only for anticoagulation antepartum, pre-eclampsia, mode of delivery. Gestational age at delivery p-value was 0.007. All other p-values > 0.05

Figure: Probability of wound complication according to timing of postpartum VTE prophylaxis in hours



693 Maternal Serum miRNAs as Biomarkers for Abnormal Placentation

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OBJECTIVE: To identify maternal serum miRNAs that may be used as antenatal diagnostic markers of abnormal placentation.

STUDY DESIGN: A multi-site cohort study of maternal serum collected between 14-41 weeks gestational age (GA) from patients with normal and abnormal placentation. Candidate miRNAs were chosen for validation based on analysis of small RNA sequencing data. Validation was performed using Taqman reverse transcription quantitative PCR (RT-qPCR) amplification of each candidate miRNA. Experiments were performed in quadruplicate and medians analyzed. Student's T test and one-way ANOVA were used to compare means, Pearson's chi-square test to analyze categorical variables, and linear regression modeling to calculate adjusted significance.

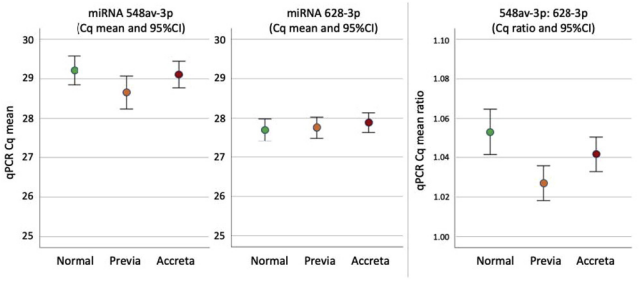
RESULTS: Twenty-one candidate miRNAs were selected for RT-qPCR amplification on maternal serum samples from pregnancies with pathology-confirmed diagnosis of placenta accreta spectrum ($n = 45$), placenta previa ($n = 31$), and normal controls ($n = 50$). Multiparity ($p < 0.001$), race ($p < 0.001$), BMI ($p < 0.001$), placental laterality ($p = 0.003$), GA at blood draw ($p < 0.001$) were significantly different across the three groups. Analysis of the RT-qPCR Cq values identified miRNA 548av-3p as the strongest candidate to differentiate between accreta and previa (mean Cq 29.11 vs 28.655, $p = 0.087$). Postulating that bivariate biomarkers of paired miRNA would yield more robust results by providing an internal control, a significant difference was found in the Cq ratio of 548av-3p / 628-3p across the three final diagnoses ($p = 0.004$), and specifically between accreta vs previa ($p = 0.024$). After controlling for parity, race, BMI, placenta laterality, and GA at blood draw, the Cq ratio of mi-548av-3p / 628-3p remained a significant predictor for the final diagnosis (partial $eta^2 = 0.093$, $p = 0.001$).

CONCLUSION: Specific maternal serum miRNAs are differentially expressed among patients with abnormal placentation. These data suggest miRNA 548av-3p may be a potential non-invasive biomarker for antenatal risk assessment of abnormal placentation.

Table 1: Demographic data

	Normal (n=50)	Previa (n=31)	Accreta (n=45)	p-value
Age (yr)	33.36 (4.05)	33.94 (5.35)	34.31 (5.04)	0.619
Multiparity	29 (58%)	19 (61%)	43 (95%)	< 0.001
Race				< 0.001
White	29 (58%)	11 (36%)	10 (22%)	
Hispanic	8 (16%)	7 (23%)	27 (60%)	
Asian	8 (16%)	8 (26%)	3 (7%)	
Black	2 (4%)	2 (7%)	2 (4%)	
Other	3 (6%)	3 (10%)	3 (7%)	
BMI	25.68 (6.08)	25.08 (4.83)	32.07 (7.06)	< 0.001
Twin gestation	1 (2%)	0	1	0.72
Male fetal sex	29 (58%)	16 (52%)	26 (58%)	0.829
Placenta Laterality				
Anterior	28 (56%)	14 (45%)	34 (75%)	0.003
Lateral	0	0	3 (7%)	
Posterior	22 (44%)	17 (55%)	8 (18%)	
EGA at lab draw	27w5d (43.78)	32w6d (26.09)	31w0d (37.30)	< 0.001
Chronic HTN	5	3	6	0.839
Pregestational Diabetes	6	2	5	0.710

Continuous variables: mean (standard deviation), Pearson's chi-square
Categorical variables: n (%), one-way ANOVA



694 Vaccination uptake in pregnancy: before and after the start of the COVID-19 pandemic

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OBJECTIVE: To investigate determinants of vaccine uptake among pregnant patients before and during the COVID-19 pandemic.

STUDY DESIGN: A retrospective observational cohort study of vaccination acceptance at UC San Diego Health before (10/1/19 – 2/29/20, Pre-COVID) and after (10/1/20 – 2/28/21, Post-COVID) the start of the pandemic. We hypothesized vaccine uptake in pregnancy would increase during a global pandemic. To mitigate reporting bias associated with vaccination outside our healthcare system, patients who initiated care after 24 weeks or after August 1st were excluded. Bivariate analysis was performed with independent Student's T test and Pearson's chi-square, and odds ratio calculated with binary logistic regression.

RESULTS: A decrease in Tetanus, Diphtheria, Pertussis (Tdap) vaccination rates was noted between Pre-COVID (879/984, 89.3%) and Post-COVID (907/1049, 86.5%) (OR 0.76, p=0.049). Flu vaccination rates showed a nonsignificant decrease between Pre-COVID (779/984, 79.2%) and Post-COVID (796/1049, 79.5%) (OR 0.82, p=0.08). Factors significantly associated with flu vaccination were nulliparity (46.9% vs 38.2%, p=0.004), early entry to care (9.7 vs 10.5 weeks, p< 0.001), Asian race (15.2% vs 7.2%, p< 0.001) and Tdap vaccination (97.5% vs 54.6%, p< 0.001). These factors did not statistically differ between the study periods. After controlling for parity, entry to care, and race, the COVID time-period was still associated with a decrease in Tdap vaccination (aOR 0.759, p = 0.045) and a trend towards decreased flu vaccine uptake (aOR 0.83, p=0.08). Telemedicine was newly adopted Post-COVID (8.5% of visits) and appointment cancelation rates increased (34.9% vs. 36.6%, p < 0.001).

CONCLUSION: The threat of a global pandemic did not improve vaccination uptake in this population. On the contrary, this data suggests a decline in vaccination rates. An increase in non-face-to-face encounters and hesitancy to seek medical care may have played a role. Understanding determinants of vaccination may help target education and public health interventions.

Figure 1: Study Design

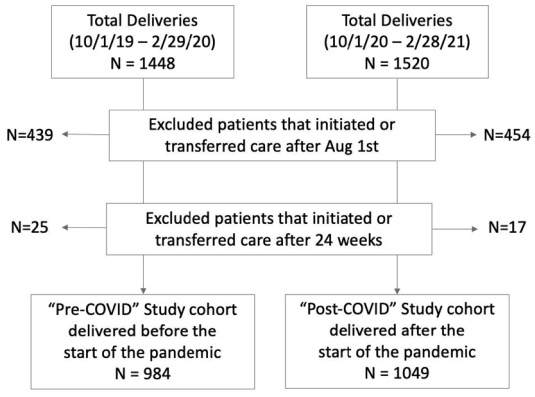

Table 1: Determinants of Flu vaccination in total cohort

	Accepted n=1575	Declined Flu n=458	P-Value
Age (yr)	32.62 (5.11)	32.16 (5.07)	0.091
Nulliparous	723 (45.9%)	175 (38.2%)	0.004
BMI	31.06 (6.40)	30.74 (6.27)	0.361
Entry into care (EGA in weeks)	9.74 (3.70)	10.52 (3.86)	< 0.001
Race/Eth			< 0.001
Hispanic	450 (28.6%)	130 (28.4%)	0.953
White	692 (43.9%)	217 (47.4%)	0.200
Asian	240 (15.2%)	33 (7.2%)	< 0.001
Black	70 (4.4%)	33 (7.2%)	0.021
American Indian	5 (0.3%)	1 (0.2%)	1.0
Mixed/unknown	118 (7.5%)	44 (9.6%)	0.142
Single marital status	308 (19.6%)	107 (23.4%)	0.076
Cesarean	409 (26.0%)	114 (24.9%)	0.671
Accepted TDap	1536 (97.5%)	250 (54.6%)	< 0.001

Continuous: mean (SD), T-test
Categorical: n (%), Pearson's chi-square

695 Noise During Cesarean Deliveries (CD): an Occupational Exposure Study

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OBJECTIVE: Operative room (OR) noise exposure has been associated with stress, communication errors and risks for postoperative complications. Cesarean delivery room environments have unique features potentially increasing the risk for noise exposure; we sought to examine the unique noise environment of the Obstetric OR.

STUDY DESIGN: We measured volume (decibel level, dB), peaks in sound pressure to annoyance levels (>70dB; vacuum cleaner), and