



# COVID-19 and Pregnancy Outcomes: An Increased Risk of Intrauterine Inflammation/Infection

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ABSTRACT**

**PHUONG NGUYEN**

**DINA EL-KADY**

**JONATHAN ROSNER**

**SALMA RAHIMI**

**CHERYL DINGLAS**

*\*Author affiliations can be found in the back matter of this article*



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## ABSTRACT

**Objective:** The objective of this study is to determine the association between COVID-19 infection and pregnancy outcomes at our institution when universal testing was implemented for all patients admitted to Labor & Delivery.

**Methods:** This was an IRB-exempt, retrospective chart review of all obstetrical patients admitted and evaluated in L&D from March 30th to April 30th. COVID-19 testing was performed on all patients who were admitted and their support person, irrespective of the presence of symptoms. Data analysis was performed with baseline demographics compared. Continuous variables were compared via T-test and categorical values using Chi-square and Fisher exact. Significant values are those considered with  $p < .05$ .

**Results:** There were no differences in delivery outcomes between the two groups with regards to mode of delivery, preterm labor, premature rupture of membranes, preeclampsia, placental abruption, or fetal demise. However, there was an increase in intrauterine infection/inflammation among COVID positive patients (8.8% compare to 1.4%,  $p < .05$ ) (**Tables 1 and 2**).

**Conclusions:** COVID positive patients were noted to have an increase in intrauterine infection/inflammation. Current published data demonstrates that SARS-Cov-2 infection during 3rd trimester of pregnancy is not associated with vertical transmission. "However, the possibility of viral load influencing the transmission risk should be of concern. Published studies have demonstrated a positive relationship between the viral load of some viruses and their ability to spread from mother to child" [1]. Given our findings, the possibility of SARS-CoV-2 infection resulting in intrauterine infection/inflammation should be further evaluated as the pandemic continues.

CORRESPONDING AUTHOR:

**Phuong Nguyen**

Mt Sinai South Nassau, US

[LONO192@GMAIL.COM](mailto:LONO192@GMAIL.COM)

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CHARACTERISTICS	COVID NEGATIVE N = 141	COVID POSITIVE N = 34	P-VALUE
Age (years)	32.0 ± 7.6	29.6 ± 7.1	.05
BMI (kg/m <sup>2</sup> )	32.2 + 6.5	31.7 + 5.5	.34
Nulliparous n (%)	52 (36.9)	14 (41.1)	.64
Race/Ethnicity n (%)			<b>.001</b>
White	<b>48 (34)</b>	<b>4 (11.8)</b>	
Hispanic	<b>40 (28.4)</b>	<b>22 (64.7)</b>	
Black	<b>20 (14.2)</b>	<b>3 (8.9)</b>	
Asian	<b>2 (1.4)</b>	<b>0</b>	
Other	<b>31 (21.9)</b>	<b>5 (15)</b>	
Smoking	4(3)	0	.99
COVID positive partner	<b>10 (7.1)</b>	<b>17 (50)</b>	<b>&lt;.001</b>
Medical comorbidities*			.32
None	116 (82.3)	32 (94.1)	
Pregestational DM	2 (1.4)	1 (2.9)	
Chronic hypertension	5 (3.5)	0	
Respiratory disease	6 (4.3)	2 (5.9)	
Autoimmune disease	7 (4.9)	0	
Other	7 (4.9)	0	
Medication use			.21
None (aside from vitamins)	113 (80.1)	30 (88.2)	
Steroids	0	0	
Aspirin	1 (0.7)	1 (2.9)	
Heparin/Lovenox	2 (1.4)	0	
Other	25 (17.7)	3 (8.8)	

**Table 1** Baseline demographics: Patients who tested negative vs. positive for SARS-CoV2.

Continuous variables are reflected as mean (SD). Categorical values are reflected as n (%).

\* n greater than 141, and greater than 34, respectively as 2 patients had 2 or more medical comorbidities.

OUTCOMES	COVID NEGATIVE	COVID POSITIVE	P-VALUE
Gestational age at delivery (weeks)	38.7 ± 2.5	38.4 ± 1.5	.24
Vaginal delivery	87 (61.7)	21 (61.8)	.99
Preterm labor	4 (2.8)	0	1.0
Preterm Premature rupture of membranes	7 (4.9)	1 (2.9)	.61
Placental abruption	0	0	1.0
Fetal demise	2 (1.4)	0	1.0
Preeclampsia	9 (6.4)	3 (8.8)	.62
<b>Intrauterine Infection</b>	<b>2 (1.4)</b>	<b>3 (8.8)</b>	<b>.01</b>
Placental Pathology			
Normal	35 (24.8)	17 (50)	0.49
Abnormal	5 (3.5)	4 (11.8)	

**Table 2** Comparison of outcomes between COVID negative and COVID positive patients.

Continuous variables are reflected as mean (SD). Categorical values are reflected as n (%).

## COMPETING INTERESTS

The authors have no competing interests to declare.

## AUTHOR AFFILIATIONS

**Phuong Nguyen**  [orcid.org/0000-0002-0569-7340](https://orcid.org/0000-0002-0569-7340)

Mt Sinai South Nassau, US

**Dina El-Kady**  [orcid.org/0000-0002-5809-5888](https://orcid.org/0000-0002-5809-5888)

Mt Sinai South Nassau, US

**Jonathan Rosner**  [orcid.org/0000-0003-4998-2431](https://orcid.org/0000-0003-4998-2431)

Mt Sinai South Nassau, US

**Salma Rahimi**

Mt Sinai South Nassau, US

**Cheryl Dinglas**  [orcid.org/0000-0002-3128-9586](https://orcid.org/0000-0002-3128-9586)

Mt Sinai South Nassau, US

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## REFERENCE

1. **Pan Y, Zhang D, Yang P, Poon LL, Wang Q.** Viral load of SARS-CoV-2 in clinical samples. *Lancet Infect Dis.* 2020. DOI: [https://doi.org/10.1016/S1473-3099\(20\)30113-4](https://doi.org/10.1016/S1473-3099(20)30113-4)

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