

## Evaluation of Maternal and Fetal Outcome in Covid-19 Positive Pregnant Women

Dr. Sonal Agrawal<sup>1</sup>, Dr. Sunita Dhaka<sup>2</sup>, Dr. Suman Meghwal<sup>3</sup>,

Dr. Lokesh Meena<sup>4</sup>

<sup>1</sup>Associate Professor, Department of Obstetrics & Gynaecology, Jhalawar Medical College, Jhalawar, Rajasthan, India

<sup>2</sup>PG Resident Department of Obstetrics & Gynaecology, Jhalawar Medical College, Jhalawar, Rajasthan, India

<sup>3</sup>Senior Resident Department of Obstetrics & Gynaecology, Jhalawar Medical College, Jhalawar, Rajasthan, India

<sup>4</sup>PG Resident Department of Obstetrics & Gynaecology, Jhalawar Medical College, Jhalawar, Rajasthan, India

Corresponding Author: Dr. Sunita Dhaka

### Abstract

**Background:** The novel coronavirus disease (COVID-19) is the most challenging health crisis today that we are facing. Against the backdrop of this pandemic, it becomes imperative to determine the effect of this infection on pregnancy and its outcome. Therefore, this study was aimed to determine to evaluate the maternal and fetal outcome in COVID positive pregnant women.

**Method:** In this retrospective study we included all pregnant women admitted with COVID-19 over period of 15 April 2021 to 31 May 2021. Clinical features and feto-maternal outcomes were assessed.

**Results:** The incidence of COVID positive pregnant women was found to be increased may be because of increase testing capacities of laboratories. More patients delivered by LSCS(50.54% ). Admission to ICU relatively increased in mothers(15.38%). Increase incidence of iatrogenic preterm births and caesarean sections due to maternal or fetal compromise. All neonates were tested negative for COVID-19. Incidence of IUD(17.64%) appeared to be increased.

**Conclusion:** There is relatively higher rate of LSCS. Overall preterm delivery and IUD was increased. Maternal ICU admission and death due to COVID-19 complication was also increased.

**Keywords:** COVID-19 pandemic ,pregnancy, feto-maternal outcomes, mortality and morbidity ,neonates.

## Introduction

In Dec 2019, a viral outbreak emerged from Wuhan in the Hubei province of China, reportedly being caused by a novel coronavirus. It has now spread worldwide and is one of the most severe public health threats<sup>[1]</sup>. On March 11, 2020, WHO announced COVID-19 as a pandemic<sup>[2]</sup>. The physiological and immunological changes during pregnancy may result in systemic effects that predispose women toward complications from respiratory infection leading to maternal and foetal mortality and morbidity<sup>[3,4]</sup>.

The COVID-19 pandemic in India is part of the worldwide pandemic of Coronavirus disease 2019. The first case of COVID-19 in India, which originated from China, was reported on 30 Jan 2020<sup>[5]</sup>. India has the largest number of confirmed cases in Asia<sup>[6]</sup>. A new SARCOV-2 variant Lineage B.1.617 was declared in the country<sup>[7]</sup>. By early April 2021, a major 2<sup>nd</sup> wave of infections took hold in the country<sup>[8]</sup>. In May 2021 WHO declared that variant first found in India will be referred to as 'Delta' and 'Kappa'<sup>[9]</sup>. As of 12 JUN 2021, India has the second highest number of confirmed cases in the world (after the United States) with 29.3 million reported cases of COVID-19 infection and the third-highest number of COVID-19 deaths (after the United States and Brazil) at 367,081 deaths<sup>[10,11,12]</sup>. Therefore, to facilitate efforts in managing COVID-19 infection in pregnant women we collected and analysed detected clinical data and foeto-maternal outcome of pregnant women with confirmed COVID-19 infection at a tertiary care centre in Rajasthan, India.

### Aim:

This study was aimed at studying the evaluation of maternal and foetal outcome in COVID-19 positive pregnant

## Method

This study is retrospective observational study, conducted at tertiary care centre in Rajasthan, India, in the department of obstetrics and gynaecology over months between 15 April 2021 and 31 May 2021 after getting approval from Ethical Committee. In this study all pregnant women with confirmed COVID-19 infection, in the defined duration were included. The demographic details including age, parity, and period of gestation, associated co-morbidities, clinical characteristic laboratory investigations and foeto-maternal outcomes were noted retrospectively from the medical records kept at medical record section. The data were analysed for the desired results.

## Results

### Demographic Profile

In present study, maternal age ranged between 19-45 yrs. 40.10% of the patients were primigravida and 59.89% of are multigravida. Most of the patients (64.83%) reported in 3<sup>rd</sup> trimester of pregnancy ( $\geq 37$  weeks of POG).

**Table 1: Demographic and clinical details of pregnant women with COVID-19 infection.**

Sr.no.	Demographic and clinical details	No. Of patients	Percentage (%)
1	COVID pregnant patients	(n=182)	<b>100%</b>
2	Parity(n=182) i)Primigravida ii)Multi gravida	73 109	40.10% 59.89%
3	Period of gestation (n=182)  i)≤12 weeks- ii)13-<37 weeks iii)≥37-41 weeks	02 62 118	01.09% 34.06% 64.83%
4	Chief complains on admissions (n=124 out of 182) i)Pain abdomen ii)Bleeding per vaginum(BPV) iii)PROM  iv)PPROM  v)Decrease fetal movement vi)Loss of fetal movement	56 25 20  9  9 5	30.76% 13.73% 10.98%  05%  05% 02.74%
5	Associated co-morbidity (n=85 out of 182) i)Oligohydramnios ii)Preeclampsia iii)GHTN  iv)Hypothyroidism v)GDM	36 24 14  9 2	42.35% 28.23% 16.47%  10.58% 02.35%
6	Symptoms(n=182) i)Asymptomatic ii)Symptomatic A)URTI  B)Fever(associated with URTI)  C)Respiratory distress(associated with fever and URTI) D)GIT related  E)Decrease urine output	124 58 45  37  27 11  01	68.13% 31.86% 24.72%  20.32%  14.83% 06.04%  00.54%

### Maternal Complains

The most common complaint was pain abdomen (62.63%) followed by bleeding per vaginum, prom, PPRM, decrease fetal movement, loss of fetal movement.

Out of 182 patients, 58 patients were symptomatic COVID-19 positive patient ,many were having multiple presenting symptoms, most common was upper respiratory tract infection (cough, cold, sore throat) (24.72%),fever, respiratory distress, vomiting, diarrhoea, decrease urine output.

### Associated Comorbidities

The most common associated co-morbidity was preeclampsia (28.23%) followed by GHTN, hypothyroidism, GDM. Ultrasonography of fetal wellbeing of 36 patient showing severe oligohydromnios which further had outcome of 6 IUD deliveries.

**Table 2: feto-maternal outcomes of pregnant women infected with COVID-19 INFECTION.**

Sr.no.	Feto-maternal outcomes	No. of patients	Percentage%
1	Mode of deliveries (n=182) i)Abortion ii)LSCS iii)NVD iv)ANC	1 92 78 11	00.54% 50.54% 42.86% 06.04%
2	Neonatal COVID-19 RT-PCR report(140)	Positive	00.00%
3	Neonatal maturity(n=140) i)Preterm ii)Term	46 94	32.85% 67.14%
4	Neonatal status(n=170) i)Shifted to mother side ii)NICU iii)IUD	103 37 30	60.58% 21.76% 17.64%
5	Maternal ICU admission and death (n=28 out of 182) i)ICU admission ii)Expire iii) ARDS with bilateral pneumonitis. iv) ARDS with renal failure v)Atonic PPH vi)other complications	28 12 9 2 1 4	15.38% 06.59% 4.94% 1.09% 0.54% 2.19%

### **Pregnancy Outcome**

2 patients who came in the 1<sup>st</sup> trimester, out of them 1 had incomplete abortion, required dilatation and evacuation and the other was managed conservatively and continues pregnancy. 11 patients were managed conservatively and 42.82% (78/182) of the patients had normal vaginal deliveries and 50.54 % ( 92/182) had LSCS.

### **Neonatal Outcome**

Neonatal COVID-19 by nasal swab RT-PCR was done and no neonate found COVID-19 positive. Were 46 born as preterm, whereas 94 of neonates were born as term. 37 baby required NICU admission, reason for NICU was respiratory distresses(29),low birth weights(4), preterm(4).

30 patients delivered as IUD, in which 13 mothers were symptomatic, most common cause for them APH(12) followed by associated factors were severe oligohydramnios, PE with IUGR, decrease fetal outcome, cord prolapsed(twin), prom, PPROM, chorioamnionitis, ruptured uterus

2 were stillborn; one because of sudden drop of oxygen saturation (35%) of mother intrapartum and other had chorioamnionitis.

### **Maternal Complication**

28 patients required admission in ICU and 12 out of them died because of ARDS with Bilateral pneumonitis, ARDS with renal failure due to acute kidney injury and due to atonic PPH having severe jaundice.

### **Discussion**

Viral pneumonia is believed to be the most common non obstetric infectious diseases during pregnancy associated with maternal and neonatal morbidity and mortality<sup>[13]</sup>. SARS COV-2 virus, is highly infectious and is currently causing thousands of morbidities and mortality<sup>[14]</sup>. The present study involved 182 COVID infection positive pregnant women age between 19-40 years. 40.10% of the patients were primigravida, whereas 59.89% were multigravida .this difference in parity could be because of regional variation. Although the pregnant women with COVID -19 infection with mild upper respiratory tract symptoms , but the risk of developing severe preeclampsia during this period is high<sup>[15,16,17]</sup>. WHO reports found that the adverse pregnancy outcome was high especially among those with associated diseases such as preeclampsia or other complications because of respiratory syndrome may aggravate pulmonary oedema and decrease oxygen saturation.

In our study, patient had presented with a no. Of co morbidities or complication like preeclampsia (28.23%) followed by GHTN(16.47),hypothyroidism(10.58%), GDM(2.35%), acute kidney injury (00.54%) and jaundice(00.54).

In our study 68.13% (124) patients were asymptomatic and came to hospital with labour related complains. As in our hospital , RT-PCR is recommended for all admitted patients. These patients are substantial contribution to spread of disease.31.36% patients were symptomatic and presented with symptoms of URTI(24.72%), fever(20.32%), respiratory distress(14.28%), GIT symptoms like vomiting and diarrhoea(06.04%), decrease urine output (00.54%).

Liu et al.<sup>[18]</sup> and Fan et al<sup>[19]</sup> reported that most patient acquired the infection in the third trimester of their pregnancy. Similar findings were noted in our study. In present study patients were admitted with chief complain of pain abdomen(30.76%),leaking per vaginum(15.92%), bleeding per vaginum(13.73%),loss of fetal movement(5%) and loss of fetal movement(02.74%).

The emergence of the disease with respiratory implications in the third trimester of pregnancy is usually associated with a higher risk of LSCS, preterm birth and IUD<sup>[16,17;19]</sup>. But in our study LSCS was done for obstetrics indication like non progression of labour, fetal distress, previous 1 LSCS with scar tenderness, previous 2 LSCS etc. and not just because patient is COVID19 infection positive. Patients presented in first trimester, one had abortion and other was conservatively managed. 11 ANC patients were conservatively managed and discharged. 42.86% of patients delivered per vaginally and 50.54% delivered by LSCS.

Neonatal COVID-19 by nasal swab RT-PCR was done and no neonate found COVID-19 positive. 46 were born as preterm, whereas 94 of neonates were born as term. 37 baby required NICU admission, reason for NICU, 29 respiratory distresses, 4 low birth weights, 4 preterm. 30 patients delivered as IUD, in which 13 mothers were symptomatic, most common cause for them APH(12) followed by associated factors were severe oligohydramnios, PE with IUGR, decrease fetal outcome, PPRM chorioamnionitis, rupture uterus 2 were stillborn; one because of sudden drop of saturation (35%) of mother intrapartum and other had chorioamnionitis.

28 patients required admission in ICU and 12 out of them died because of (9) ARDS with Bilateral pneumonitis, (2) ARDS with renal failure due to acute kidney injury and (1) due to atonic PPH having severe jaundice.

### Conclusion

There is currently limited knowledge about SARS-COV2 INFECTIONS IN PREGNANCY. In our study there is relatively higher rate of LSCS. Third trimester seems to be the most vulnerable period of infection, so active surveillance is needed at the end of second trimester. Further it was found that there is higher rates of adverse outcomes reported in mothers with comorbidities, reason is not clear whether it is because of COVID 19 infection or co-morbidities, further studies are needed. There is relatively higher rate of preterm delivery and IUD was increased. Maternal ICU admission and death due to COVID-19 complication was also increased. It seems that COVID-19 infection is not vertically transmitted as all neonates were tested negative. However, long term follow up of these babies to see any delayed effects is necessary.

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