

# COVID-19 in Pregnancy: An Experience at a Dedicated Tertiary Care COVID Facility in Western Uttar Pradesh

Shehla Jamal<sup>1</sup>, Natasha Singh<sup>2</sup>

## ABSTRACT

**Introduction:** COVID-19 in pregnancy has put all perinatal services at a slog pace due to restricted movement and fear associated with the unknown challenges that the entire world is facing. At a tertiary care center, where a majority of the cases are referred from adjoining areas, the incidence of complications encountered was more. The present study discusses the impact of COVID-19 in pregnant females and subsequent perinatal outcomes.

**Aims:** To study the perinatal outcomes in COVID-19-diagnosed pregnancy.

**Type of study:** Observational analytical study.

**Methodology:** All the pregnant females with COVID-19-diagnosed pregnancy were studied for their demographic profile, symptomatology, laboratory results, obstetric outcome, and neonatal performance between June 18, 2020, and September 30, 2020.

**Results:** A total of 114 obstetric patients were admitted at this particular level two-facility center. Out of this, 21 were symptomatic, 22 delivered by cesarean, two cases of ruptured tubal ectopic pregnancy were seen, two cases of ruptured uterus were there, nine cases were received in obstructed labor, four cases of incomplete abortion, and three stillbirths were reported at our center. None of the neonates was tested positive for COVID-19. Oligohydramnios was seen in 25.4% of cases and thrombocytopenia was a significant finding in 33.3% of the patients.

**Conclusion:** COVID-19 has affected the obstetric population with varied outcomes all throughout pregnancy. Even in asymptomatic patients, complications like oligohydramnios and thrombocytopenia were seen. Obstetric services were poorly catered at the periphery as many patients were received in emergency as cases of obstructed labor and ruptured uterus. COVID-19 has negatively affected each dimension of service care provisions and the health and outcome of the obstetric population.

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## INTRODUCTION

Coronavirus in pregnancy has limited data since its first emergence in December 2019. Researchers all over the world have to pool the data so that the best practices can be established for easy reference and guidance while managing such cases. The experiences published from across the globe have claimed different outcomes and variable presentations. Regional data study is important to provide insights for making treatment protocols and understand its course in the pregnancy. Such an attempt is done in the present observational study where obstetric services were provided at level two dedicated COVID center located in western Uttar Pradesh.

Coronavirus is highly pathogenic and causes varied symptomatology, which ranges from mild fever and sore throat to full-blown respiratory failure. In the data presented by Sonja A Rasmussen,<sup>1</sup> it was observed that clinical findings in pregnant females were similar to nonpregnant individuals. Higher risk of preterm delivery, fetal distress, need for mechanical ventilation have been reported by different scholars.<sup>1,2</sup>

In addition to the disease itself, the obstetric outcome also depends on the level of services and obstetric care available in an area. The poor outcome is compounded by the delays in referrals and transfers. Our center was catering to referred patients from adjoining government and private centers. COVID-19 in pregnancy has put all perinatal services at a slog pace due to restricted movement and fear associated with the unknown challenges that the entire world is facing. At tertiary care center, where a majority of the cases are referred from adjoining areas, the incidence of complications encountered was more. The present study discusses

<sup>1,2</sup>Department of Obstetrics and Gynecology, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India

**Corresponding Author:** Shehla Jamal, Department of Obstetrics and Gynecology, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh, India, Phone: + 91 8527686529, e-mail: [essjayoms@gmail.com](mailto:essjayoms@gmail.com)

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the impact of COVID-19 in pregnant females and subsequent perinatal outcomes.

## METHODOLOGY

### Type of Study

A longitudinal observational analytical study was done in 114 diagnosed COVID-19 obstetric patients. All the admitted patients between June 2020 to September 2020 were studied for their demographic parameters, obstetric profile, symptoms, gestational age at presentation, laboratory reports, gestational age at delivery, obstetric interventions, and neonatal outcome. The frequency of complications, like prematurity, postdatism, prolonged labor, postpartum hemorrhage, associated medical or surgical disorders, like hypertensive disorders of pregnancy (HDP),

diabetes mellitus (DM), anemia, or other hematological disorders, was studied. The observations were compiled and interpretation was done in the percentage method.

## RESULTS

A total of 114 obstetric patients were admitted to our facility. Out of these, 16 patients were postpartum and the rest were antenatal. The mean age of the patients was 26.8 years and a majority of the pregnant patients were of the parity 2.2. Out of total obstetric patients, 18.3% were symptomatic and grades of severity are presented in (Table 1). The majority of the females were diagnosed at an average gestational age of 38.2 weeks.

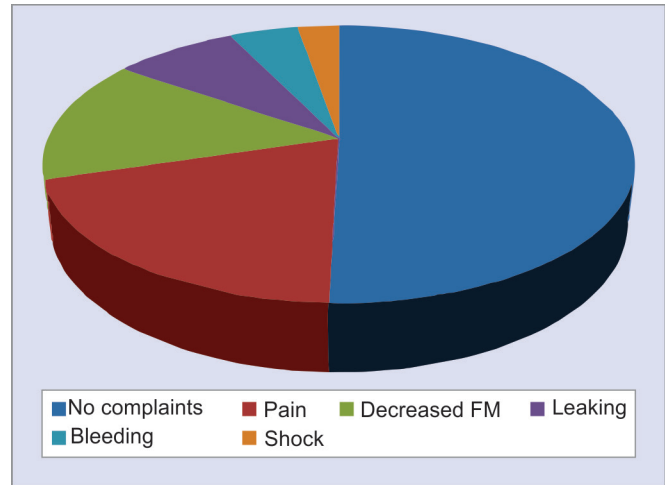
According to the complaints at presentation, 14% of the patients reported decreased fetal movement perception, 7.8% leaking per vaginam, 19.2% labor pain, six patients were planned for elective cesarean delivery, 2.6% came in shock, and 4.3% came with bleeding per vaginam (Fig. 1).

When laboratory findings and ultrasonography (USG) were studied, 51 patients had anemia (44.7%), 33.3% had thrombocytopenia, 25.4% had oligohydramnios. Leukocytosis was observed in 25.4% of patients (Table 2).

**Table 1:** Demographic profile

Age in years	n	Percentage	Mean
18–25	24		
26–33	47		
34–40	43		
			26.8
Parity			
1	39		
2	52		
≥3	23		
			2.2
Gestational age at admission			
6–27/6	19		
28–36/6	32		
37–42	47		
Postpartum	16		
			38.2
COVID symptoms			
Asymptomatic	93		
Mild	16		
Moderate–severe	5		
Mode of delivery			
Vaginal	29		56.8
Abdominal	22		43.1
Laparotomy	4		
Assisted vaginal	0		
Time from referral to reach hospital			
<4 hrs	58		
5–8 hrs	23		
>8 hrs	33		4.5

In the patients who had mild symptoms on presentation, thrombocytopenia was a consistent finding, observed in 33.3% of the patients. Only one patient developed moderate to severe symptoms after admission. In the patients having moderate to



**Fig. 1:** Complaints at presentation

**Table 2:** Laboratory parameters

Investigation	Number (n)	Percentage %
Maternal		
Anemia	51	44.7
Thrombocytopenia	38	33.3
Leukocytosis	29	25.4
Deranged liver function	6	5.2
Deranged kidney function	2	1.7
Positive D-dimer assay	4	3.5
Chest radiograph changes	6	5.2
Fetal/neonatal		
Oligohydramnios	29	25.4
FGR	3	2.6
Stillbirths	3	2.6
NICU admission	4	3.5
Positive oropharyngeal swab for COVID	0	0
No. of patient with breastfeeding	76	67%

severe symptoms, D-dimer was elevated in 3.5% cases, leukocytosis was seen in 29 patients (25.4%), and 74% of these patients required oxygen support at >12 L per hour (Table 2).

When we identified the time from diagnosis from COVID positive lab status to contact to level two services, the average time to reach was 4.5 hours. In some cases, the delay was as long as 11 hours. Timely diagnosis and intervention are the cornerstone for crisp management in emergency obstetric services (Table 2).

The neonatal transmission was not seen in any of the cases, tested by oropharyngeal swabs done immediately after birth. The rate of breast feeding saw a decline as only 67% of the delivered patients were breastfeeding (Table 2).

There were two stillbirths in ruptured uterus cases and one stillbirth in an obstructed labor case, referred late from the private setup (Fig. 2).

## DISCUSSION

Soon after the allocation of the levels of care by the government, tertiary care centers were converted to dedicated COVID care

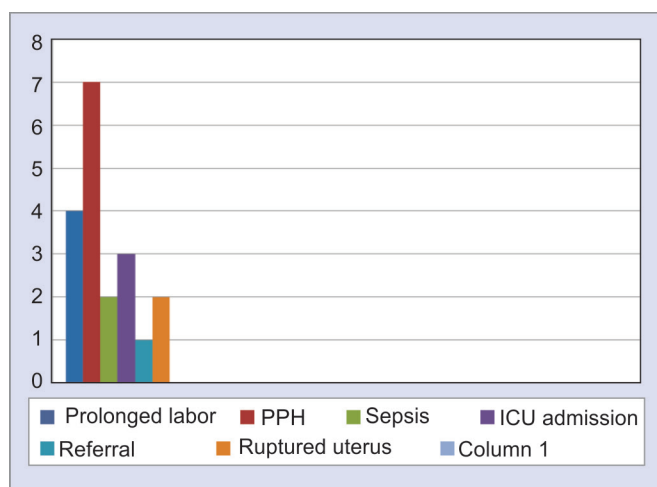


Fig. 2: Rates of complications observed

facilities, so that state-of-the-art treatment can be provided to the patients suffering from this newly diagnosed virus. The diagnostic and treatment algorithms are being continuously revised in the light of evolving data. The place of the current study is located in western part of Uttar Pradesh and we studied the impact of COVID-19 on obstetrical population admitted at our center.

Many papers published since January 2020 have reported different outcomes and different rates of complications. Majority of the reports were observational and studied variable outcome parameters.

We had a total of 114 obstetric patients admitted from June 18, 2020, to September 30, 2020. The mean age of the patients was 26.8 years and majority of them belonged to the second order of parity. According to the central registry data compiled by CDC, majority of the cases reported from all over the world are in the age bracket of 25 to 29 years and our data are also consistent with this finding<sup>2</sup> (Table 1).

We analyzed reporting complaints at the time of admission and found that majority (49.1%) of the patients had no complaints at the time of being admitted. Around 19.2% of the patients presented with labor pain and 14% with decreased perception of fetal movements (Fig. 1).

Maximum patients were in the gestational age-group of 37 to 42 weeks. A higher incidence of postdatism in 12.1% was seen in the present analysis. In 7% of the patients, babies were born prematurely. It has been reported by the WHO report published on September 1, 2020, also.<sup>3</sup> Only 18.3% of the cases were symptomatic on admission, out of these, 4.3% had moderate to severe symptoms. In the report published by WHO, it is discussed that in pregnancy with CoV SARS, they may experience lesser symptoms like fever or muscle pain but in cases where the severe disease is present, they are more likely to get ICU admissions when compared to nonpregnant counterparts (Fig. 2).

When the mode of birth was analyzed, 56.8% (29) of the cases delivered vaginally and 43.1% were taken up for cesarean deliveries. It was seen that laparotomy for ruptured uterus was done in two cases and two was done for ruptured tubal ectopic pregnancy. All four cases presented in obstetric casualty in shock. In one retrospective study from 12 hospitals in Italy by Ferrazzi et al., it was observed that 57.1% of patients delivered vaginally, and cesarean delivery was performed in 42.9% of the patients.<sup>4</sup>

Our observational study also corroborates the same rates with respect to the mode of delivery. The mean time taken from the primary test report to final arrival at our center was 4.5 hours. But a delay of >8 hours was seen in nine cases, and all of these cases were received in casualty needing emergency interventions.

When an analysis on the frequency of maternal complications was done, it was seen that, apart from anemia seen in 44.7% (51) of cases, thrombocytopenia was seen in 33.3% (38) cases. Out of these, 18.4% (7) had platelet counts <20,000, 31.5% (12) had platelet counts <80,000, and rest had <1 lakh/cmm. There is no available consistent data to confirm our finding in the existing literature. We found leukocytosis in 25.4% of cases. Positive D-dimer assay was found in four out of nine ICU admitted patients in our analysis (Table 2).

Elevated D-dimer level, increased neutrophil counts, elevated C reactive protein (CRP) level, and decreased lymphocyte count is quadrad and is associated with poor obstetric outcome according to the reports published in the study by Li et al.; however, we did not observe any consistent pattern in these four markers in the present analysis.<sup>5</sup>

In the fetal complications studied, it was observed that oligohydramnios, AFI<8 was seen in 29 (25.4%) cases. After a review of the current literature, no corroborating data are available.

Three stillbirths observed at our place were not related to COVID-19 infection per se, as two were referred cases of rupture of the pregnant uterus both with previous two cesarean scars and one case had Intrauterine death (IUD) with obstructed labor, referred from a private setup.

Postpartum hemorrhage was seen in 13.4% (7) cases, and other complications like prolonged labor, and sepsis were seen in a small proportion of patients (Fig. 2).

Owing to the novelty of coronavirus, it is difficult to emphasize whether the above-mentioned complications occurred in increased frequency in pregnant females as compared to nonpregnant females.

## CONCLUSION

COVID-19 has set unprecedented challenges in all the dimensions of patient care. The challenges were faced both ways, as clinicians, the management of COVID was a continuously evolving problem and on the other hand, patients were also finding it difficult to comprehend the seriousness of the disease.

Our center, which was dedicated to catering to COVID-affected patients, saw a variety of complications. Such complications were already reported from all over the world. We saw a steep increase in the incidence of anemia, thrombocytopenia, oligohydramnios.

All except one patient were discharged in healthy condition from our center. It realigns the dictum of good care for better outcomes for the patients.

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