

Original Research Article

# Study of maternal and fetal outcome in COVID positive patients

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**Abstract: Background:** Coronavirus disease 2019 [COVID 19] is caused by severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2] and was declared a global pandemic in March 2020. The impact of coronavirus disease 2019 on maternal and fetus health is unclear. We performed an observational study to determine the association between SARS-CoV-2 infection and adverse pregnancy outcomes, including preterm birth and stillbirth.

**Materials and methods:** Study is carried out in covid ward of the Department of Obstetrics and Gynaecology at Bharati Vidyapeeth Medical College and Hospital, Sangli. This is a retrospective study involving all pregnant patients admitted in the covid ward of our hospital from April 2021 to December 2021. Information regarding age, parity, condition of the patient at the time of admission to covid ward in terms of oxygen saturation, mode and time of delivery, outcome of pregnancy, fetal outcome and maternal morbidity and mortality were noted and analysed.

**Results:** From analysis of available data maternal hypoxia and fetal distress were the most common indications for caesarean section. Caesarean section accounted for 86.6% of all deliveries, successful vaginal delivery were reported in 2 out of 15 deliveries, rest 3 cases were reported as missed abortion and D&E was done.

**Conclusion:** Covid 19 infection in pregnancy may be associated with increased risk of caesarean section, preterm birth, increased morbidity and mortality.

**Keywords:** COVID -19; Caesarean section; Preterm birth.

## 1. Introduction

**C**oronavirus disease 2019 [COVID 19] is caused by severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2] and was declared a global pandemic in March 2020 [1]. Pregnant females and infants born to these females are particularly susceptible to COVID-19 because of the physiological changes of pregnancy involving cardiorespiratory and immune systems. These changes of pregnancy may result in an altered response to SARS-CoV-2 infection [2].

Fetuses may be exposed to SARS-CoV-2 infection in pregnancy [3]. The nature of the association between COVID-19 and pregnancy outcome is still not clear, and analysis involving pregnant patients with COVID-19 is still limited [4,5]. Although some recent observational studies have suggested that people with confirmed asymptomatic and symptomatic COVID-19 infection, as well as mild and severe infections, may be at risk of adverse pregnancy outcomes, further studies are needed to evaluate these data [6–15].

Women with laboratory-confirmed COVID-19 infection were at an increased risk of emergency cesarean delivery, with 27.6% as compared to the normal rate of 18.5%. Delivery may improve maternal condition in women with severe COVID-19 infection, leading to an increase in preterm births and neonatal unit admissions, with 12.1% as compared to the normal rate of 5.8%.

The aim of this study is to investigate the maternal and fetal outcomes in COVID-19 positive patients. The objectives are to document the maternal outcomes and complications in COVID-19 positive patients, as well as to document the fetal outcomes and complications in COVID-19 positive patients.

## 2. Materials and Methods

This study was conducted in the Covid ward of our hospital. It is a retrospective study involving all pregnant patients admitted to the Covid ward from April 2021 to December 2021. The following information was collected and analyzed: age, parity, patient's condition at the time of admission (including oxygen saturation), mode and time of delivery, pregnancy outcome, fetal outcome, and maternal morbidity and mortality. A total of 35 pregnant females were admitted and underwent thorough examination, including a detailed history, general physical examination, and abdominal and pelvic examination.

## 3. Results

**Table 1.** Agewise distribution of Study group

S.No.	Age of patients(in years)	Total number of patients	Percentage
1.	18-22	10	34.4%
2	23-27	13	37.1%
3	28-32	6	17.1%
4	33 and above	6	17.1%

Table 1 shows the agewise distribution of Covid 19 patients admitted in the hospital during the study period .Majority of cases were seen in the age group of 23-27 years i.e. 37.1% [13], 28.5% patients in the age group of 18 -22 years and 34.4% [10] cases above the age of 28 years.

**Table 2.** Gravida wise distribution of the study group

S. No.	Gravida	Total number of patients	Percentage
1.	Primigravida	16	45.7%
2.	Multigravida	19	54.3%

Table 2 shows distribution according to the number of times the patient has been pregnant in the study group.54.3% [16] females in the study group were multigravida and rest 45.7% [14] were primigravida.

**Table 3.** Condition of the patients at the time of admission

S. No	Oxygen requirement	Number of patients	Percentage
1.	Without oxygen	12	34.3%
2.	With oxygen	23	65.7%
	A] on nasal prongs	2	
	B]on oxygen mask	6	
	C]On NRM mask	10	
	D]On NIV	5	

Table 3 shows the condition of patients at the time of admission to the Covid ward. Out of 35 patients, 34.3% of them were not requiring oxygen therapy at the time of admission. Rest 65.7 % patients needed oxygen support in which 2 patients were on nasal prongs ,6 patients requiring plain oxygen mask ,10 out of them needed NRM i.e Non Rebreather mask and rest 5 patients were on NIV [Non invasive ventilation].

**Table 4.** Mode of delivery in the study group

S. No.	Mode of delivery	Number of Patient	Percentage
1.	Vaginal Delivery	2	13.34%
2.	Caesarean section	13	86.6%

Table 4 shows the mode of delivery in the study group. Around 86.6 % patients underwent caesarean delivery while the rest 13 % had vaginal delivery.

**Table 5.** Outcome of Pregnancy in the study group

S.No.	Pregnancy outcome	Number of patients	Percentage
1	Preterm Delivery	6	17%
2.	Term Delivery	9	25.7%
3.	Abortions	3	8.5%

Table 5 shows the pregnancy outcome in the study group. Out of 35 patients who got admitted only 18 patient's pregnancy outcome is known .Out of which 25.7% patients had Term delivery mostly caesarean section and 17 % patients had preterm delivery .8.5 % patient had abortion .It was not clear whether these abortions were due to coronavirus infection or some other obstetric cause ,but since the percentage of patient is significant in the study group, they can be attributed to COVID 19.

**Table 6.** Maternal Outcome in the study group

S.No.	Outcome	Number of patients	Percentage
1	Discharged as ANC	17	48.6%
2	Discharged as PNC	15	42.8%
3	Maternal Death	3	8.5%

Table 6 denotes the maternal outcome of the study group due to coronavirus infection. About 48.6 % [15] patients were discharged without delivery as they were in early gestational period and patients were vitally stable. 42.8% patients were discharged post delivery or abortion. Rest 8.5 % [3] patients had maternal mortality.

**Table 7.** Fetal outcomes in the study group

S.No.	Fetal Outcome	Number of patients	Percentage
1.	Intrauterine Death	3	20%
2	Preterm Baby	3	20%
3	Term baby	9	60%

Table 7 shows the fetal outcome .Out of the total 16 deliveries,60 % neonates were term babies, 20 % were Preterm and rest 20% had stillbirth.

#### 4. Discussion

A total of 35 pregnant women with Covid 19 infection were included in the study. 17 pregnant women presented in early gestational week and were discharged undelivered without any major complication. The outcome of these pregnancies were not known. From analysis of available data maternal hypoxia and fetal distress were the most common indications for caesarean section. Anatomical changes such as an increase in the transverse diameter of the thoracic cage and an elevated level of diaphragm,,decrease maternal tolerance to hypoxia were responsible for the outcome in Covid positive patients. Lung volume changes and vasodilation can lead to mucosal oedema and increase secretion in the upper respiratory tract. In addition, alterations in cell mediated immunity contribute to increase susceptibility of pregnant women to be infected by viruses [17].

Of the clinical signs and symptoms, pregnant women with COVID 19 infection commonly presented with fever, persistent dry cough and dyspnea (65.7%) . It was noted that most of the women were given anti-viral therapy and oxygen therapy. Antibiotic treatment was given either to prevent superimposed bacterial infection or as prophylaxis before caesarean section. Caesarean section accounted for 86.6% of all deliveries, successful vaginal delivery were reported in 2 out of 15 deliveries, rest 3 cases were reported as missed abortion and Dilatation and Evacuation was done. 8.5% of all these pregnancies had multi organ dysfunction with acute respiratory distress syndrome that lead to intubation and ventilator support and further resulted in maternal mortality. In these cases the neonates were stillborn and all preterm births. 8.5% of babies born to these mothers were preterm and were admitted for NICU care, they had no signs of Covid infections and were discharged after recovery.

SARS-CoV-2 infection may also cause exaggerated systemic inflammatory response involved in the pathogenesis of preterm births or a suboptimal environment for fetal growth and development. Placental malperfusion has been found in placental histopathological findings in patients with COVID 19 at delivery [16], which may contribute to fetal growth, stillbirth and preterm births. Lack of knowledge about Coronavirus infection in pregnancy has raised many questions among Obstetricians and Neonatologists about the risk of maternal, fetal and neonatal morbidity and mortality. There is an urgent need for evidence based guidelines for clinical decisions .

## 5. Conclusion

Covid 19 infection in pregnant patients results in an increase in the incidence of caesarean delivery and preterm birth .Covid 19 infection leads to hypoxia and may result in maternal mortality and morbidity .It is also responsible for some cases of intrauterine death of the fetus.As there are still many questions unanswered and for better understanding of relationship of Covid 19 infections and it's manifestations in mother as well as the fetus, further studies would be needed on large scale.

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**Conflicts of Interest:** "The authors declare no conflict of interests."

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