

# Pregnancy Outcome of a COVID-19 Infected Teenager in Remote Nepal: A Case Report from Nepal

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## Abstract

We present in this report case of a 19-year-old teenager who had presented in her near term, infected with COVID-19 and delivered in rural part of Nepal. She is probably one of the first COVID-19 infected case in this country to be delivered normally.

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## Abstract:

We present in this report case of a 19-year-old teenager who had presented in her near term, infected with COVID-19 and delivered in rural part of Nepal. She is probably one of the first COVID-19 infected case in this country to be delivered normally.

**Keywords :** Cesarean Section, Childbirth, COVID-19, Pregnancy, SARS-CoV-2

## Key Clinical Message:

In a secondary hospital setting, the dedication shown by health care staffs, timely management of logistics, careful consideration of delivery of this SARS-CoV-2 infected patient has prevented possible complications, set an example for all.

## Introduction:

Maternal Health Service has been affected negatively worldwide like any other services due to the Coronavirus Disease 2019 (COVID-19) pandemic and a significant rise in maternal death globally has been estimated over the next six months [1]. The 2002-2003 SARS infection was associated with unpleasant outcomes for pregnancy that caused significant morbidity and mortality [2]. Similarly, MERS infection, 2018, resulted in high case fatality among the vulnerable pregnant women and their fetus [3]. Like SARS and MERS, the causative organism for COVID-19 is also a corona virus, hence COVID-19 becoming a pandemic raises alarm for both pregnant women and obstetricians. With COVID-19 cases continuing to hike in significant proportion, the number of infected pregnant women of all gestational ages has increased [4]. COVID-19 has predominant respiratory complications and various clinical features of this infection has similarities and differences with MERS and SARS [5]. According to a recent surveillance report from the US CDC, it was found that, in comparison to nonpregnant women, pregnant women were 5.4 times more likely to be hospitalized, 1.5 times more likely to be admitted to the ICU and 1.7 times more likely to receive mechanical ventilation when infected with COVID-19 [6]. However, the frequency of symptomatic disease and mortality were not increased in pregnant women compared to nonpregnant women[6]

Decreased compliance of chest wall with increased minute ventilation, tidal volume, oxygen consumption ( raised by 20%); decreased Functional Residual Capacity and compensated respiratory alkalosis are the notable changes in respiratory system during pregnancy that puts women in jeopardy for viral infection [7]. Hypoxia in turn leads to hyperventilation, thus that women are likely to inhale more air and if air contains contaminated aerosol or droplets, they are more likely to be infected than other populations [8]. Suppression of cell-mediated immunity and a shift to the Th2 immune system from Th1 environment in pregnancy leads to more inclination on certain viral and bacterial infections [9, 10].

In Nepal, the first mortality due to COVID-19 was of a woman in her 10<sup>th</sup> postpartum day of vaginal delivery, who had delivered a preterm baby, her symptoms being dyspnea and cough [11]. The nasopharyngeal swab for Reverse Transcriptase - Polymerase Chain Reaction (RT-PCR) of the woman was only taken after she was dead which came out positive and neonatal RT-PCR test had come out to be negative [11]. We are presenting a case report of a COVID -19 positive teenager with term pregnancy who was managed in a rural hospital setting in Nepal. She was asymptomatic for this infection and normal vaginal delivery was conducted smoothly in a limited resource setting with appropriate safety measures applied. The concerned obstetrician and team had adequate time in planning the delivery with the best possible limited resource mobilization that could have been available in this circumstance.

### Case:

A 19-year Gravida 2 Para 1, Abortion 0 Living issue 0 at 38 weeks 2 days period of gestation had been shifted from quarantine of Dhorpatan Municipality to the isolation ward in Dhaulagiri Hospital on June 21, 2020 when she was tested positive for Severe Acute Respiratory Syndrome Coronavirus 2 (SARS CoV-2) infection via RT-PCR. She had returned from Punjab, India, around 12 days back with her husband and both were tested positive one day prior to being shifted to Hospital's isolation ward. A detailed history was taken from the patient and full clinical examination was done after admission in the ward following appropriate safety measures. She had only one antenatal checkup during her pregnancy and had received a single dose of Diphtheria and Tetanus Toxoid injection during that time. Ultrasonography had not been performed on this female during any period of her pregnancy. She had no history of fever, cough, chest pain, or shortness of breath. She did not mention any history of altered taste or smell, diarrhea, or pain in the abdomen. The patient perceived fetal movements regularly. She also had no history of any chronic medical illness or surgery. Previous baby was a male child delivered at term, who died due to respiratory difficulty at around 1 month of life. She had delivered the baby when she was just 16 years of age.

Her blood pressure during examination was 92/58 mm of Hg, temperature was 97.2, °F, heart rate was 92 beats per minute, and peripheral oxygen saturation was 99% on room air. Her respiratory and cardiovascular system examinations were normal. Abdominal examination showed term sized fetus, cephalic in presentation with regular fetal heart sound and there was no contraction. The head was engaged. On pelvic examination, there was no any bleeding or excessive vaginal discharge. Bishop score was 5 with cervical os, closed and

uneffaced, soft, central cervix and vertex was on -1 station. Pelvis was an average gynecoid type. Blood investigation was sent (Table 1) and Ultrasonography (USG) of the patient was planned. USG was performed by radiologist following appropriate safety measures. The ultrasound showed regular fetal heart rate and active fetal movement. The placenta had anterior uterine insertion and liquor volume was mentioned to be adequate with regular fetal umbilical artery doppler velocimetry. The estimated fetal weight was mentioned to be 2831 grams and approximate gestational age as 36 weeks and one day.

A multidisciplinary approach involving obstetrician, critical care physician, internist, and pediatrician was done in this case for the plan in management. A common consensus came out from the team to give the patient options to choose the mode of delivery in view of history of previous infant death. The patient along with her husband chose for normal vaginal delivery unless for any obstetric indication cesarean section would be performed. Her preliminary diagnosis was 19 years G2P1L0ID1 at 38 weeks and 2 days period of gestation with SARS-CoV-2 positive status, not in labor. Following that, a new room was allocated for normal delivery of the patient. Oxygen supply, instruments for vaginal delivery and oxytocin, tranexamic acid, baby warmer were arranged in that room for this purpose. OT setup was prepared in case emergency indication for CS would evolve. An Intensive Care Unit, which had been set up only recently in this hospital, was prepared for this patient for any possible critical care emergency. Ventilators and suction machines along with other ICU equipment were standby for any possible complication. She was well counselled and was examined on a regular basis by the health care providers. During each interaction with the patient, use of personal protective equipment was done. Special care regarding the nutrition of the woman was done and regular assurances was provided by the nursing in-charge and obstetrician in-charge.

With these findings, the patient was planned for elective induction of labor at 39 weeks period of gestation. However, on 3<sup>rd</sup> day of admission, the patient during the early morning had complained of abdominal pain. When examined, her uterine contraction was found to be moderate, Bishops score was 10 with cervical os 4 cm dilated, cervix was soft, central, 60% effaced with head station at +1. She was taken to the new room assigned as a temporary labor room. Her vital signs, contractions, fetal heart rate were monitored regularly. She delivered a male baby of 3300 grams with APGAR score 7/10, 8/10, 9/10. The labor period was uneventful and there was no excessive blood loss. 10 IU of Oxytocin was given to her intramuscularly following the childbirth. Spontaneous vaginal delivery was under supervision of obstetrician and the baby was received by pediatrician. Her vital recording was taken regularly following the delivery and was within normal range. Baby had breastfed regularly from the time of birth and the mother was using the mask continuously when she was with the baby. After childbirth, her nasopharyngeal swab samples were taken twice which came out to be negative. The baby had been tested within 48 hours for IgG/IgM antibody against the antigen of SARS CoV-2 which came out to be negative. On the day third of birth, nasopharyngeal swab samples were taken from the baby which came out to be negative as well. The nasopharyngeal swab samples taken were in accordance with the World Health Organization (WHO) guidance. Patient was discharged on July 4, 2020 after a period of 14 day of hospital stay and was asked to follow up for any health issues. After 28 days of her delivery, a telephone call was done and she was asked if she or her baby had any health problem. She informed that both herself and her baby had no problem.

**Table 1: Laboratory Parameters of the patient (21 June, 2020)**

| Laboratory Parameters | Value           | Laboratory Parameters | Value      |
|-----------------------|-----------------|-----------------------|------------|
| Blood Group           | AB positive     | Random Blood Glucose  | 83 mg/dl   |
| Hemoglobin            | 11.7 gm/dl      | Sodium                | 136 mmol/L |
| Total Leukocyte count | 9200 / $\mu$ l  | Potassium             | 3.7 mEq/L  |
| Neutrophil            | 85%             | Urea                  | 6 mg/dl    |
| Lymphocyte            | 10%             | Creatinine            | 0.6 mg/dl  |
| Monocyte              | 3%              | Total Bilirubin       | 0.8 mg/dl  |
| Eosinophil            | 2%              | Direct Bilirubin      | 0.5 mg/dl  |
| Platelets             | 292000/ $\mu$ l | AST                   | 14 U/L     |
| PCV                   | 39 %            | ALT                   | 16 U/L     |

| Laboratory Parameters | Value                       | Laboratory Parameters | Value    |
|-----------------------|-----------------------------|-----------------------|----------|
| RBC                   | 3.8 million/mm <sup>3</sup> | ALP                   | 103 U/L  |
| MCV                   | 92 %                        | LDH                   | 383 U/L  |
| MCH                   | 30 pg                       | HIV                   | Negative |
| MCHC                  | 29 gm/dl                    | HBsAg                 | Negative |
| PT                    | 17                          | HCV                   | Negative |
| INR                   | 1.5                         |                       |          |

## DISCUSSION

There have been many instances where COVID-19 patients, either pregnant or non-pregnant have had experienced many hardships when they have visited hospitals, stayed in quarantine or isolation. Fever and dyspnea are common manifestations of COVID-19 infection in pregnancy but there are still chances of maternal and fetal morbidity as well as mortality. Hence, once this infection is established in the pregnant women, it should be taken as high alert [12-14]. Obstetric (including vaginal) examination, Ultrasonography (including vaginal scans), Vaginal or cesarean delivery all fall on moderate risk for health care workers for the transmission of COVID-19 and appropriate safety measures should be applied while these procedures are performed [15]. Moreover, CDC recommends the prevention of COVID-19 to be highlighted for pregnant women and there is a need to address the potential barriers of adherence to these measures [6].

We on our limited resource setting have best supported this case of pregnant lady and completed the delivery successfully. In our case, the patient was asymptomatic. In several of cases with COVID-19 infection, positive clinical and laboratory findings were completely different from what we have detected [13, 14, 16, 17]. The scenario in different cases mentioned below may differ from a single case of COVID-19 pregnant patient of our hospital in rural Nepal.

In Wuhan, China, from December, 2019 to March, 2020 a total of 118 pregnant women with COVID-19 were identified, out of which 71% had positive polymerase chain reaction and 29% with suggestive findings on computed tomography [13]. Majority of the infected women belonged to the third trimester accounting for 75 of the total cases with fever and cough were the findings in most of the patients [13]. Laboratory findings of lymphopenia and CT findings of infiltrates in bilateral lung fields were other common findings [13]. The disease was mild in 92% of the patients and 8% of the cases developed severe disease [13]. During the study, 68 of total women had undergone childbirth with 93% cases undergone cesarean section [13]. The indication of cesarean in 61% of the cases was due to the concern regarding COVID-19 on pregnancy and there were no maternal or neonatal deaths [13]. Only eight of the neonates were tested for PCR and all of which came to be negative [13].

Another case series by Breslin et al of 43 test-positive cases of COVID-19 from March 13<sup>th</sup> to 27<sup>th</sup>, 2020 at Columbia University Irving Medical center, New York, in which one-third of patients were asymptomatic during initial diagnosis [16]. Dry cough and fever remained the most common symptoms [16]. Most of the women had mild disease (86%), 4 had severe disease, and 2 had critical disease [16]. Out of 18 women who gave childbirth during this, around half had undergone cesarean section and all for obstetric indications with no maternal or neonatal deaths and neither of the neonates had nasopharyngeal test positive for COVID-19 [16].

Other case series published in the setting of infection of SARS-CoV-2 infection in pregnancy had similar findings in terms of maternal and fetal outcome with predominantly mild variation of disease in mother, preterm delivery, lesser frequency of neonatal infection [14, 17, 18]. A study in Iran of 9 cases with severe COVID-19 cases illustrated that 7 had died, 1 remained critically ill and ventilator dependent, and 1 had recovery following prolonged hospitalization [12]. Mode of delivery in 4 cases were via Cesarean Section, 1 via normal vaginal delivery and 2 of the undelivered cases were on mid second trimester of all 7 cases [12]. This shows the severity of corona virus infection on pregnancy. Severe cases have recovered and mild cases have

gone fatal in COVID-19 infection for both mother and baby [13, 14]. We had prepared ICU and arranged all the equipment necessary for possible mechanical ventilation in our patient.

With these evidences of preterm delivery and low birthweight of the newborns born to SARS CoV-2 infected cases, an issue of whether to give tocolytics and steroids in a COVID-19 woman in early third trimester seems to be a good point of discussion. It also seems clear that arrangement of adequate logistics and human resources in a health care facility saves lives of both mother and baby. Examples of several evidences of maternal and fetal morbidity and mortality even in a tertiary care setting had made us alert. In light of that, we paid special attention in hospitalization of the infected pregnant lady, booked an Intensive Care Unit for her and arranged equipment for the purpose of mechanical ventilation. High priority in applying safety measures while performing examinations and conducting her delivery was done. Health care workers need to apply special precautions to limit cross-infection while conducting procedures like vaginal delivery which increases droplet exposure and contact with the patients.

In our secondary hospital setting, the dedication shown by health care staffs, timely management of logistics, and careful consideration of the delivery of this SARS CoV-2 infected patient have definitely prevented complications. Asymptomatic cases of COVID-19 should not be taken lightly. This is what the pandemic has taught us and we tried our best in implementation of this fact during the management of this patient.

### **Data availability**

Not applicable

### **Declaration of Conflicting Interest**

The authors declare that they have no conflict of interest regarding the publication of this case report

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### **Ethical approval**

As this was a case report, ethical approval from the Institutional Review Board was not sought. However, written informed consent was obtained from the patient.

### **Patient Consent**

Written consent for publication was obtained from the patient.

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