



## Obstetric Outcomes of Severe COVID-19 Pneumonia in Pregnant Lady After Caesarean Delivery: A Case report

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**Significance:** Pregnancy is a state of an altered body physiology. The last trimester is a crucial period for optimal neonatal outcomes. Peri-partum COVID-19 infection has not been sufficiently reported in the existing literature. The successful mother and neonatal outcomes in this case adds to the literature about management of life-threatening peri-partum COVID-19 infection in a developing country with limited resources.

### Abstract

Since the outbreak of coronavirus (COVID-19) in December 2019, understanding regarding coronavirus symptoms has been evolving. Medical issues in pregnancy usually resolve after delivery. Similarly, pregnant ladies with COVID-19 pneumonia had improvement in their condition after giving birth. However, in this case, the patient tested positive for "SARS-Cov-19 antigen PCR" and intended for vaginal birth, which was unsuccessful and resulted in a caesarean surgery. After the healthy baby was delivered, she experienced a life-threatening cytokine storm that necessitated elective intubation and mechanical breathing, as well as anti-viral medication. She was extubated after two weeks and then discharged on recovery. Previously, the Middle Eastern Respiratory Syndrome Coronavirus (MERS-SARS) and the Influenza virus (H1N1) were the most well-known viruses for generating potentially fatal results in pregnancy. This is first reported instance in Pakistan of a pregnant lady developing severe COVID-19 pneumonia. This research fills a vacuum in the medical literature and alerts obstetricians and clinicians to the likelihood of life-threatening postpartum, COVID-19 pneumonia complications.

### Introduction

The current general public health emergency as coronavirus disease (COVID-19), declared as a "COVID-19 outbreak," is of global concern nowadays (1). In Pakistan, from January 3<sup>rd</sup> 2020 to, September 13<sup>th</sup> 2022, there have been 1,571,196 confirmed cases of COVID-19 with 30,599 deaths, reported to WHO, this illness continues to kill a substantial number of individuals worldwide (1). Pandemic outbreaks in the past, such as the H1N1 influenza virus, severe acute respiratory syndrome coronavirus 2 (SARSCoV-2), Zika virus, and Middle East respiratory syndrome coronavirus (MERS-CoV), have had a negative influence on both maternal and perinatal outcomes (2). During the SARS coronavirus-1 and Middle East respiratory syndrome (MERS) pandemics, pregnant women were more vulnerable to

virus-caused respiratory disease, resulting in significant complication and fatality rates among obstetric patients (3).

Pregnant women are a major worry in the current epidemic since they need to see a doctor at least once a month for prenatal care and delivery (4). However, the evaluation and management of pregnant women infected with COVID-19, as well as the potential dangers of vertical transmission from mother to neonate, are equivocal (5). Literature searched showed that serious outcomes happened to women during gestational amenorrhea with COVID-19 (6). Usually, clinical improvement of severe COVID-19 pneumonia is observed in a pregnant patient after cesarean delivery (7). However, our work describes a rare incidence of COVID-19-positive pregnant women who developed SARS following a Lower Segment Cesarean Section (LSCS). A study of the literature revealed a dearth of information on the result of a pregnant woman infected with COVID-19. The purpose of giving such a case study is to explain the difficulties encountered when dealing with COVID-19-infected pregnant women in Pakistan's limited resource health system in a crisis condition.

### Case Presentation

During 36 weeks of pregnancy, a 29-year-old female (primary gravida) patient reported to our emergency room with complaints of fever, dry cough, and shortness of breath for one week. There had been no contact with a coronavirus patient or travel to the pandemic area. The reverse transcription-PCR for SARS-COV-2 in the nasopharynx and oropharynx is positive. During the prenatal period, all screening exams and tests were within normal limits. She was vitally stable when she arrived. The results of the laboratory tests were within the usual range. After failed induction of labor for spontaneous vaginal birth, the patient was taken to the COVID-19 Higher dependency unit (HDU), and an emergency LSCS was done under spinal anesthesia without difficulties. Following regular treatment, the infant was deemed to be normal by the neonatologist and transferred to the neonatal ICU for isolation. She was sent to the isolation unit for two weeks after waking up from anesthesia. Following the procedure, the operating room was fumigated and cleaned. During the postoperative phase, the patient received oxygen support and suctioning, and prone posture were initiated. Chest X-Ray and High-Resolution Computerized Tomography (HRCT) of the patient taken after delivery given in figures 1-3 show findings characteristic of extensive pulmonary involvement by the coronavirus infection. However, the patient's clinical state began to deteriorate with desaturation,

increased oxygen need, persistently higher respiratory rate, and difficult breathing, necessitating elective intubation and mechanical ventilation. Tocilizumab 400 mg monoclonal antibody was administered in a single dosage, but the treatment was withdrawn due to signs of superimposed infection and sepsis. The patient was performed, and she was successfully extubated after six days of incubation tapering off the trial to mechanical breathing. For a week, the patient received oxygen assistance through a rebreather mask and non-invasive ventilation (NIV) as needed. The patient was released home in stable health after 17 days in the hospital

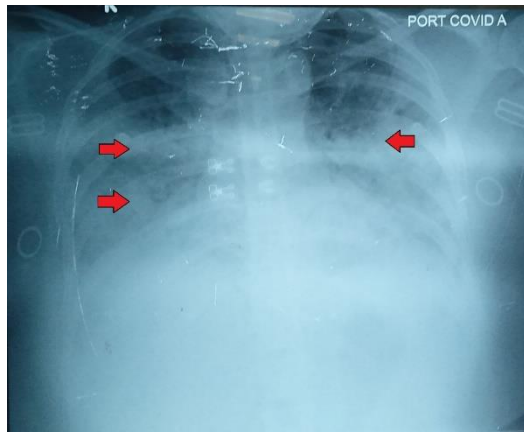


Figure 1. Chest X-ray PA (posterior-anterior) view showing bilateral haziness (red arrow heads).

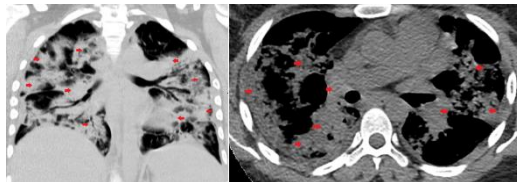


Figure 2. HRCT Chest Coronal view (left) and Midsagittal view (right) showing infiltrates (red arrows) bilaterally, a typical finding in the lungs affected with Coronavirus infection.

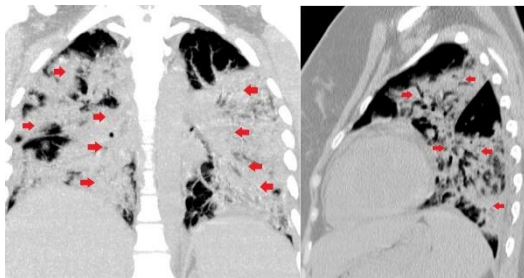


Figure 3. HRCT Chest Coronal view (left) and Lateral view (right) showing multi-lobar extensive areas of consolidation (red arrows) in both lungs without zonal predilection representing active pulmonary infection.

## Discussion

Few cases of pregnancy co-infection with COVID-19 have been described in the literature, and even fewer have been recorded during childbirth, following caesarean surgery. Furthermore, the early strategy to managing pregnant women with COVID-19 was similar to that of non-pregnant women because there was no defined guideline on when and how to deliver the patient. In our investigation, the patient was delivered through caesarean section under spinal anesthesia, which is similar with the findings of Liu et al., who analyzed pregnant women co-infected with COVID-19 and discovered that 77% of caesarean sections are due to a variety of factors (8). Wange et al. showed that intubation in COVID-19 patients is a dangerous procedure that increases the risk of respiratory droplet infection, which readily transfers viral infection (9). Another study found that patients with minimal symptoms and little illness have less problems, which is consistent with our findings (10). The treatment plan was not specific to our patient, as per guidelines, in the study (11).

To the best of our knowledge, this is one of the few examples worldwide, and the first in Pakistan, that detail the use of Tocilizumab, an IL-6 inhibitor that interferes with the cytokine storm phase of COVID-19, in pregnant delivery. A small cohort trial in China found that patients with moderate to severe COVID-19 infection improved quickly (12). Similarly, our patient responded quickly to a single dosage of Tocilizumab injection. It's hard to say if her quick clinical recovery was entirely attributable to medicine. Her respiratory distress symptoms did not worsen after the injection and improved dramatically following the caesarean delivery. Multiple studies have supported the fact that the course of COVID-19 pneumonia in pregnant women carries low risk than the non-pregnant females (13-15). Other studies have mentioned that the symptoms of coronavirus infection ameliorate after the delivery of the baby (7). In our situation, contrary to earlier studies, the patient's clinical status deteriorated following LSCS delivery. A case of severe COVID-19 pneumonia during the peripartum phase is shown here. Similarly, Swedish researchers found that the probability of ICU admission in pregnant or postpartum women with COVID-19 illness was higher (14.4/0.1 million) than in normal pregnant women (2.5/0.1 million) in the same age range (16). Pregnant women suffering from severe COVID-19 infection and requiring mechanical ventilation have previously been reported, as have reports of maternal mortality with evidence suggesting cytokine storm syndrome, an overactive response of the body's immune system against the virus rather than the virus being responsible for severe symptoms (17). Increased levels of pro-inflammatory cytokines such as IFN, TNF, IL15, and IL17 have also been documented in MERS-CoV-infected pregnant women. Similarly, COVID-19 infection has been associated to elevated plasma levels of these cytokines during pregnancy, resulting in a cytokine storm (18). Because

the underlying pathophysiology of MERS-Cov and COVID-19 is similar, it is important to note that the presentation of COVID-19 in pregnancy, like MERS viral infection from the same family, can be potentially deadly.

### Conclusion

The effects of COVID-19 on pregnancy are not thoroughly documented. Various studies have found that the severity of COVID-19 pneumonia is decreased following Caesarean section birth in pregnant women. However, the outcomes of the current research were different since the patient in question suffered from a severe episode of pneumonia even after birth. This must be proven by conducting large-scale investigations. To minimize potentially fatal effects of the condition, obstetricians and gynecologists, as well as other medical experts, must place a greater emphasis on the prenatal care of mothers afflicted by COVID-19. It also emphasizes an essential issue: in such circumstances, due to the mother's seclusion, a mother-baby attachment cannot be created, which has an indirect impact on infant care. To corroborate such a presentation, more studies with a high level of statistical significance are required.

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