

# Preparedness of COVID-19 Infection at the Time of Emergent Cesarean Section

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**Abstract:** *The coronavirus disease outbreak has been declared a pandemic by the World Health Organization, with more than 11.5 million cases reported till date- as of July, 2020. Recent evidence suggests that pregnant women are more likely to develop severe illness from COVID-19. There should be strategies in place to deliver for COVID-19 suspected or confirmed pregnant cases so that the safety of patients and health care workers is ensured. It has seen that early preparedness in such circumstances helps to reduce the transmission of disease to the health care workers. Multidisciplinary care coordination involving Maternal-Fetal Medicine, Infectious Disease, Pulmonary/Critical care, Obstetric care, Anesthesia and neonatology should be followed. This article helps to guide how to get prepared for a cesarean section on a COVID positive patient while reminding all healthcare workers of the importance of self-protection, hand hygiene and self-care as we continue in our mission to care for patients who are at the heart of all that we do.*

**Keywords:** Cesarean delivery, COVID, Personal protective equipment (PPE), neonate

## 1. Introduction

The coronavirus disease outbreak has been declared a pandemic by the World Health Organization, with more than 11.5 million cases reported till date- as of July, 2020. It is a type of mild to severe form of respiratory illness caused by Severe Acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It is characterized by symptoms such as fever, cough, malaise, and breathlessness. People from all age groups can be affected by this disease.

Recent evidence suggests that pregnant women are more likely to develop severe illness from COVID-19.[1] Pregnant women with symptomatic illness are instructed to undergo testing on priority basis. The diagnosis of COVID-19 is made by reverse transcriptase polymerase chain reaction method (RT-PCR).

COVID-19 infection in pregnancy is associated with an increased risk of low birth weight, preterm delivery and still birth. Coexisting maternal disease such as anemia or asthma increase the risk of acquiring respiratory infections in pregnancy. Basal lung infiltrates, along with decreased residual capacity due to compression of diaphragm by gravid uterus, further decreases oxygen carrying capacity of blood. This can cause worsening of symptoms. A pregnant woman with acute COVID-19 infection is at maximum risk during labor due to hyperventilation and aerosol generation. [2]

There should be strategies in place to deliver for COVID-19 suspected or confirmed pregnant cases so that the safety of patients and health care workers is ensured. It has seen that early preparedness in such circumstances helps to reduce the transmission of disease to the health care workers.

## Patient admissions and location

There should be a designated support person for the entire admission. All efforts should be made to limit the movement of COVID suspect or confirmed women from one care area to another.

## Pre-CD laboratory tests

The women should undergo routine preoperative laboratory test. There are some changes noted with COVID-19 that have important implications in care for the pregnant patients. Specifically, COVID-19 may be associated with transaminitis, elevated creatinine, and thrombocytopenia. This is an important consideration in a patient presenting with a hypertensive disorder in assessing whether she has severe features of preeclampsia, hemolysis, elevated liver enzyme levels, and low platelet count syndrome, versus manifestation of COVID-19. The tests should be individualized. These include complete blood count, coagulation profile, renal function test, liver function test, C-reactive protein and Lactate dehydrogenase levels (LDH).

Written surgical and anesthesia consent taken. After donning PPE, pen to be discarded after taking consent.

**Multidisciplinary care coordination involving Maternal-Fetal Medicine, Infectious Disease, Pulmonary/Critical care, Obstetric care, Anesthesia and neonatology should be followed. A mock drill should be held with the team to brief them of their roles.**

**Transport:** Members of the hospital security cordoned off the area to minimize the risk of accidental exposure during the transport.

Room Setup: Designate, when possible one Operating room (negative pressure as available) with equipment for confirmed COVID-19 patients. Designated proper donning and doffing areas is required. A designated PPE (personal protective equipment) observer should be assigned to ensure proper donning and doffing of PPE. Antibiotic prophylaxis to be given.

Blood to be kept ready in operating room (OR) before shifting the patient.

### Anesthesia in Cesarean Section of a COVID-19 positive patient

Both regional and general anesthesia can be used safely for cesarean delivery in parturient with COVID-19. In case of less SpO<sub>2</sub> (<93%) or emergency cases, general anesthesia needs to be administered with preoxygenation followed by rapid sequence intubation. Powered air-purifying respirators are used for care of patients. When the parturient oxygen saturation is adequate (>93%), regional anesthesia with epidural top-up or subarachnoid block (SAB) is recommended. It decreases aerosolization during preoxygenation, face-mask ventilation, endotracheal intubation and extubation. Time required for surgical readiness in case of SAB is comparable to GA and neonatal outcomes are better.

Informed consent is to be taken. The patient is explained about the procedure of subarachnoid block. It should be performed by an experienced prescrubbed anesthetist.

An elective LSCS is considered to be a better option for COVID-19 positive parturient than emergency cesarean as a woman in labour produces excess aerosol due to hyperventilation and it demands more personnel and PPE kits. The Society of Obstetric Anesthesia and Perinatology has recommended avoidance of emergency deliveries in COVID-19 parturient as much as possible.[3]

Scrub nurses and surgical assists should simulate donning appropriate PPE outside OR and then prepare their setup inside. NICU team should perform donning of PPE outside OR and then prepare their setup for receiving, newborn resuscitation in a separate area outside the OT. Before donning any personal stuff such as mobile phones or pens should be kept outside.

Unlike the traditional surgery, instruments were opened after cleaning and draping the patient. Two runners in appropriate supplies were available outside the observation room for additional supplies.



Senior Consultant obstetrician performs Cesarean delivery. Care is to be taken to minimize risk of needle stick injuries and healthcare personnel exposure. Newborn is handed over to the neonatology team waiting in the buffer area immediately after early cord clamping. The buffer area is the area outside the operation theatre so that the operation theatre does not get exposed to the external hallway directly.



Buffer Area



Buffer Area

OR team should pro-actively manage third stage to minimize risk of PPH and need for blood products. Care should be taken to minimize use of electrocautery to decrease aerosolization. Adequate use of suction to be done whenever cautery is used. [4]

Operating team should be conversant with difficulties due to fogging. For this one assistant scrubbed in PPE can be present outside for backup to be called in if visibility issues occur. One can also face problems due to decreased tactile stimulation and difficulty in communication and identification. Name tags can be attached to face shields to identify healthcare personnel. Communication in sign language can be used whenever possible. Number of persons working at a time in the OT to be limited and exchange of team members is to be reduced to minimum.[6]Scrub nurses should transfer specimens (e.g. placenta) as per institutional protocol to minimize exposure to healthcare personnel Dirty linen was also placed in the same bag.

To prevent Neonate from acquiring Covid-19 infection certain measures should be taken. Immediate cord clamping should be done. Pediatrics team not to enter inside OT. Baby is transported outside the OT to the buffer area. They should stay in Buffer Area but all the Pediatrics Personnel involved should be in PPE. Baby Neonatal Resuscitation Trolley is kept fully equipped functional containing all the airway equipments, Medications and vascular Access equipment in another clean room adjoining the buffer area. Baby is brought to warmers for drying & stimulation. Necessary respiratory support is provided within this room.

If baby is active, transfer the baby to mother side. Pediatrics team then doffs the PPE properly. If baby needs respiratory support transport to separate isolation kept for COVID by Pediatrics team in PPE.

Patient should be recovered in an area designated by the institution to minimize healthcare personnel exposure. Post anesthesia care team and a runner in PPE from obstetrics and gynae team should transfer the patient minimizing risk of exposure to other patients and healthcare personnel through designated route and location as per institution. [4,5]

The entire team should perform doffing after the patient has been shifted from OT. Designated PPE observer(trained staff) to be present to supervise appropriate doffing and proper hand hygiene at all steps. [4]. The operation theatre to be cleaned and closed. Instruments to be washed and sterilized.

## 2. Post op care

Continued use of acetaminophen and Ibuprofen can be done. Early ambulation and discharge to be considered. The family is not allowed to meet the patient.

Breast milk can be expressed with pump. WHO recommend that suspected or confirmed COVID-19 should be encouraged to initiate or continue to breastfeed. [6]

All mothers and babies regardless of COVID-19 status need support to remain together to practice rooming-in, establish breastfeeding, practice skin to skin contact or Kangaroo mother care. Mothers to undertake hand washing before & after contact with the baby and consider wearing a mask when feeding. Routine cleaning and disinfecting of all surfaces that the mother had contact with should be undertaken at regular intervals. [7,8]

## 3. Summary

The number of cases of COVID-19 continues to rise exponentially in many parts of the world. Pregnant women at all gestational ages are at a great risk. When a pregnant woman needs a cesarean delivery, the health support team face many unique challenges. There is reasonably good evidence that vertical transmission is unlikely, and efforts must be taken to prevent infection of the neonate and the health care workers. Meanwhile, it is imperative to remind all healthcare workers of the importance of self-protection, hand hygiene and self-care as we continue in our mission to care for patients who are at the heart of all that we do.

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