

Protocolized approach to a COVID-19 parturient undergoing a cesarean section – A case report

Kompal Jain, John Alen, Subodh Kumar, Sukanya Mitra

Department of Anaesthesia and Intensive Care, Government Medical College and Hospital, Chandigarh, India

Abstract

The health care workers working in the operation theater (OT) face many unique challenges to deal with the corona virus disease (COVID-19) patients undergoing surgery. We hereby report the management of a COVID-19 parturient undergoing cesarean section in the dedicated COVID health center. Patient care of this special and vulnerable subset of population with least exposure of COVID-19 to health care worker was the cornerstone of the management. We have summarized some of the important precautionary measures which were taken during cesarean section to minimize exposure and genuine use of resources in this pandemic. To conclude, despite Personal Protective Equipment (PPE), precautionary measures and strategies are of utmost importance and should be opted so as to lower the virus contagion risk.

Keywords: COVID-19, healthcare workers, operation theater, parturient

Introduction

As the world is crippling with corona virus disease 2019 (COVID-19) pandemic, surgery of immunocompromised COVID-19 parturient requires a closed loop communication and prior preparation among different medicine disciplines and the other health care workers (HCWs) with anesthesiologist serving as an architect. We hereby, report a protocolized approach to a COVID-19 parturient undergoing a cesarean section so as to maintain the maternal and fetal well-being with prevention of infection of this highly contagious disease among the HCW.

Case Report

A 27-year-old asymptomatic COVID-19 parturient, American Society of Anesthesiologist (ASA) grade 2, second

gravida with pregnancy of 40 weeks 3 days was referred to our hospital for delivery after she was tested positive on real time polymerase chain reaction (RT-PCR) test for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from the COVID care centre. She was admitted to isolation room of our hospital for continuous monitoring of vitals including oxygen saturation (SpO₂). Isolation room consisted of a single bed with single door, dedicated bathroom and air conditioning. Her investigations including coagulation, renal and liver profile were within normal limits [Hemoglobin - 10.8 g/dl, total leucocyte count - 8000/cu.mm, platelet count - 182,000/cu.mm, prothrombin time – 12 sec, INR – 1.30, activated partial thromboplastin time – 38 sec, serum urea – 16 mg/dl, serum creatinine – 0.7 mg/dl, serum sodium – 135 mmol/L, serum potassium – 3.8 mmol/L, total bilirubin – 0.3 mg/dl and alkaline phosphatase – 135 IU/L]. Due to failed induction and Intra Uterine Growth Retardation (IUGR), she was posted for category 2

Address for correspondence: Dr. Subodh Kumar,
Department of Anaesthesia and Intensive Care, Government
Medical College and Hospital, Sec 32, Chandigarh - 160 030, India.
E-mail: subodh.kgmc@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

Access this article online	
Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/joacp.JOACP_342_20

How to cite this article: Jain K, Alen J, Kumar S, Mitra S. Protocolized approach to a COVID-19 parturient undergoing a cesarean section – A case report. *J Anaesthesiol Clin Pharmacol* 2020;36:407-10.

Submitted: 14-Jun-2020

Revised: 19-Jun-2020

Accepted: 22-Jul-2020

Published: 26-Sep-2020

cesarean section in the designated COVID-19 operation theater (OT).^[1] As per our hospital policy, designated OT personnel were notified in advance so that they could don level-3 personal protective equipment (PPE)^[2,3] and prepare the OT accordingly. Patient was transported to COVID-19 OT with a surgical triple layer mask covering the face through the designated green corridor. The file was wrapped in plastic cover. Senior anesthesiologist wearing Level- 3 PPE evaluated the patient just outside OR (clear zone) and discussed regarding subarachnoid block (SAB) and back up strategy i.e., general anesthesia in case of SAB failure. Anesthesiologist after evaluation changed his outer gloves with the help of OR circulating nurse, thereby maintaining proper hand hygiene. Meanwhile, anesthesia technician (AT) prepared two trays as per our department standing operating procedure (SOP) of obstetric anesthesia for COVID-19 patient [Figure 1]. The tray that is wheeled inside the OR is called COVID-19 tray while the other is called backup tray that remains outside the OR but within the OT complex. It was the responsibility of OT runner to promptly provide requisite article from backup trolley. The individual air conditioner along with two exhaust fans were

operational throughout the surgery. Using a separate entry, the patient was wheeled inside the OR in left lateral position and simultaneously another OR helper sprayed the sodium hypochlorite solution (1%) on the footprints of the trolley.

Routine perioperative monitoring was instituted (electrocardiogram, noninvasive blood pressure (BP) and SpO₂). Her preoperative vitals were Heart rate (HR) – 102/min, BP – 120/60 mm Hg and SpO₂– 98% on room air. A peripheral venous access was secured and co-loading with 500 ml of ringer lactate was started. Injection ondansetron 4 mg and injection perinorm 10 mg was given intravenously to prevent intraoperative nausea and vomiting that may result in viral spread. Under all aseptic conditions, SAB was performed at L3-L4 level using a 26 G Quincke’s spinal needle after infiltration of local anesthesia (Lignocaine 2%) in the sitting position. While aspirating the cerebrospinal fluid (CSF) using 5 ml syringe prefilled with 2 ml of 0.5% bupivacaine (Heavy), central CSF swirl could not be appreciated due to fogging of face shield and goggles. However, on aspirating more volume, the swirl was noticed and the drug was given. The parturient was then made to lie down supine with pillow kept

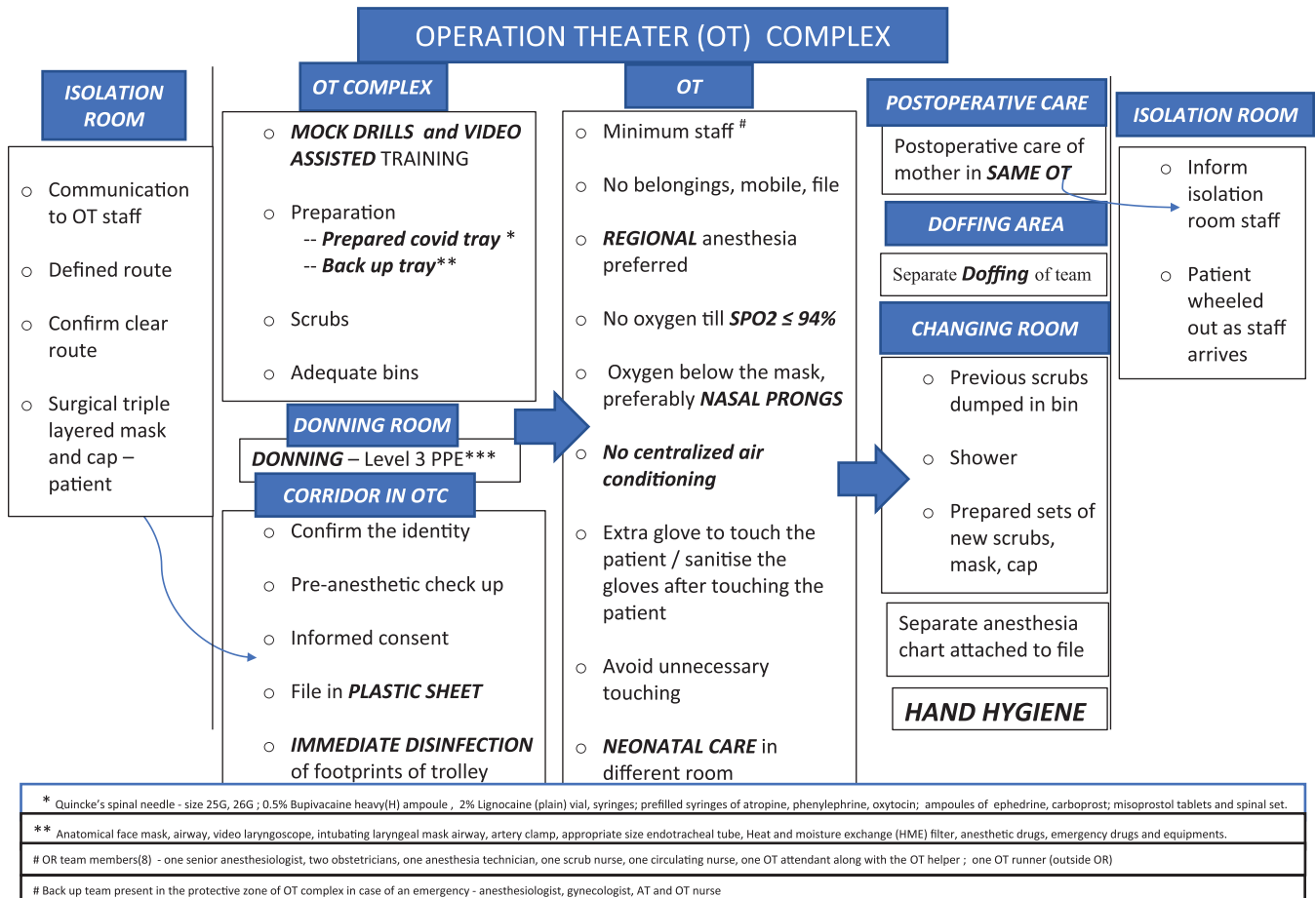


Figure 1: Summary of important precautionary measures which were taken during surgery in coronavirus disease (COVID-19) operation theater (OT)

under shoulders and a wedge to provide left lateral position. A low transverse incision was made after achieving T4 level of SAB, confirmed using modified Bromage scale, pinprick and cold sensation.

Immediately after delivery of female neonate, 3 IU of oxytocin was administered intravenously slowly over 30 sec followed by infusion oxytocin at the rate of 7.5 IU/hr. The neonate was immediately wrapped in the sterilized sheet by the circulating nurse. He handed over to the OT runner outside the OR and neonatologist further managed her in the especially prepared room in the same vicinity. The surgery went uneventful with estimated blood loss of 400 ml. Patient was monitored postoperatively on the same OT table. One gram of intravenous infusion of paracetamol was given for postoperative pain relief. The patient was shifted back to isolation room after the SAB level receded to T12 dermatome. As neonate was febrile, she was shifted to isolated neonatal care unit (NCU).

After this, the OR team (except AT) went for doffing one by one which was followed by shower in the respective changing room. The previous scrubs were dumped in separate bins kept in the changing rooms with 1% sodium hypochlorite solution. Simultaneously, the anesthesia workstation and all the monitoring cables were disinfected with 1% sodium hypochlorite by AT after discarding the disposables and covid tray articles. This was followed by disinfection of OT by OR helper and that OT was ready for next case in 1 hr.

The neonate and breast milk specimen both tested negative on RT-PCR test for SARS-CoV-2. Expressed breast feed was initiated and continued till 2 days in NCU and then the neonate was handed over to the family. The patient stayed in the isolation room. The baby was handed to the mother only for feeding and she used to breast feed the baby following infection prevention control (IPC) measures. The patient remained asymptomatic with normal postoperative investigations and was discharged from the hospital on 9th day.

Discussion

In our hospital, we have a dedicated COVID-19 OT complex which consist of two OR. It has good congruence with the standards laid by the perioperative recommendation issued during this pandemic.^[2] Due to non-availability of negative pressure OR, the makeshift arrangements were done instead of central air conditioning.

COVID-19 is highly contagious disease and found notorious to infect HCWs despite of wearing PPE.^[3] Along with providing the best clinical care for the COVID-19 pregnant patient, our aim is also to prevent the exposure of SARS- COV-2 to



Figure 2: Figure depicting the use of transparent, water resistant plastic sheet to cover monitors and anesthesia workstation to prevent cross contamination

HCWs and the newborn by taking necessary IPC measures.^[4] Therefore, we preferred to use Level 3 PPE in OT, mock drills for better coordination and transferred the newborn to the separate room immediately as a part of our effective IPC measures. Level 3 PPE included splash resistant whole body suit, N-95 mask, cap, goggles, face shield, shoe covers and 2 pairs of gloves. However, the patient was wearing surgical triple layer mask during transport as an IPC measure according to our hospital policy . It is also supported by Liew *et al.* for rational use of N-95 mask in this pandemic.^[6] In OR, circulating nurse used to help other OR members to maintain hand hygiene. Different precautionary measures and strategies were opted in covid OT to prevent cross contamination and virus fomites formation at various places.^[4,5] [Figures 1 and 2] Routine use of oxygen for fetal indications should also be avoided if the patient SpO₂ >94% so as to prevent aerosolization.

We preferred spinal anesthesia in place of general and epidural anesthesia^[4,7,8] Similarly, Bauer *et al.*^[4] and Chen *et al.*^[8] also concluded that regional anesthesia should be preferred over general anesthesia to prevent undue exposure of HCWs to aerosol generating procedure. However, involvement of angiotensin converting enzyme-II in SARS-CoV-2 infection can result in hypotensive episodes.^[8] In our case, the patient did not require any vasopressor as SBP was maintained within 90% of baseline. Recommendations on breastfeeding, vertical transmission and neonate care are controversial.^[4,5,7,9,10] Groß *et al.* reported that neonate and breast milk samples from COVID-19 mother for 4 consecutive days were tested positive for ribonucleic acid (RNA) of SARS-CoV-2 RNA.^[9] In contrast, Yang *et al.* reported that the breast milk of COVID-19 parturient did not contain SARS-CoV-2.^[10] Bauer *et al.* also reported that the incidence of the vertical transmission was low.^[4]

Since the patient was also asymptomatic in postoperative period, no further testing including chest x ray and Computed Tomography (CT) scan was done.^[5]

To conclude, despite the PPE, it is imperative to adopt certain precautionary measures and strategies to lower the virus contagion risk to HCWs.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Kinsella SM, Scrutton MJL. Assessment of a modified four-category classification of urgency of caesarean section. *J Obstet Gynaecol* 2009;29:110-3.
2. Malhotra N, Bajwa SJ, Joshi M, Mehdiratta L, Trikha A. COVID operation theatre- Advisory and position statement of Indian Society of Anaesthesiologists (ISA National). *Indian J Anaesth* 2020;64:355-62.
3. Zhong Q, Liu YY, Luo Q, Zou YF, Jiang HX, Li H, *et al.* Spinal anaesthesia for patients with coronavirus disease 2019 and possible transmission rates in anaesthetists: Retrospective, single-centre, observational cohort study. *Br J Anaesth* 2020;124:670-5.
4. Bauer M, Bernstein K, Dinges E, Delgado C, Sharawi NE, Sultan P, *et al.* Obstetric anesthesia during the COVID-19 pandemic. *Anesth Analg* 2020;131:7-15.
5. Ashokka B, Loh M, Tan C, Su L, Young B, Lye D, *et al.* Care of the pregnant woman with coronavirus disease 2019 in labor and delivery: Anesthesia, emergency cesarean delivery, differential diagnosis in the acutely ill parturient, care of the newborn, and protection of the healthcare personnel. *Am J Obstet Gynaecol* 2020;223:66-74.e3.
6. Liew M, Siow W, Yau Y, See K. Safe patient transport for COVID-19. *Crit Care* 2020;24. doi: 10.1186/s13054-020-2828-4.
7. Lyra J, Valente R, Rosário M, Guimarães M. Cesarean section in a pregnant woman with COVID-19: First Case in Portugal. *Acta Médica Port* 2020;33:429-31.
8. Chen R, Zhang Y, Huang L, Cheng B, Xia Z, Meng Q. Safety and efficacy of different anesthetic regimens for parturients with COVID-19 undergoing Cesarean delivery: A case series of 17 patients. *Can J Anesth* 2020;67:655-63.
9. Groß R, Conzelmann C, Müller J, Stenger S, Steinhart K, Kirchhoff F, *et al.* Detection of SARS-CoV-2 in human breastmilk. *Lancet* 2020;395:1757-8.
10. Yang N, Che S, Zhang J, Wang X, Tang Y, Wang J, *et al.* Breastfeeding of infants born to mothers with COVID-19: A rapid review. *Ann Transl Med* 2020;8:618.