

Case Report

Anaesthetic management of a COVID-19 parturient for caesarean section - Case report and lessons learnt

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ABSTRACT

The corona virus disease 2019 (COVID-19) pandemic sweeping across the world has severely strained health care resources (equipment and personnel) forcing us to rethink strategies to provide obstetric care while judiciously using resources. We describe the anaesthetic management of a mildly symptomatic, COVID-19 positive, 28-year-old second gravida with term pregnancy who was taken up for an elective caesarean section under subarachnoid block in a standalone maternity facility. Challenges encountered and modifications of standard procedures so as to optimize patient care and minimize exposure of health care professionals are also discussed.

Key words: Anesthesia, coronavirus 2, COVID-19, obstetrical, pandemic, severe acute respiratory syndrome

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INTRODUCTION

The management of a corona virus disease 2019 (COVID-19) positive mother is challenging as the virus is extremely contagious and can cause life threatening severe acute respiratory tract infection in 5% patients and can spread to other mothers and health care personnel.^[1,2] We describe the management of a COVID-19 parturient at the beginning of the pandemic in India, when dedicated COVID hospitals and operating rooms were still being set up and the existing maternity and neonatal facilities did not have separate air handling units capable of providing negative pressure in the operating room.

A separate maternity area may need to be set up with a lower threshold for doing caesarean sections. Central neuraxial blockade should be the preferred technique to reduce chances of aerosol generation in such situations.^[1-3] We describe this case as many may face similar challenges.

CASE REPORT

A 28-year-old COVID-positive, second gravida with 38 weeks gestation, history of previous normal

delivery and an uneventful antenatal period was admitted to an isolation room for safe confinement. In view of the oblique lie of the fetus and patient status, an elective lower segment caesarean section (LSCS) under subarachnoid block (SAB) was planned. The couple was counseled and they consented for the same.

Antenatal records revealed gestational diabetes mellitus, controlled with diet and no other comorbidities (weight 72 kg, BMI 31.2 kg/m²). Investigations were normal (haemoglobin 11.3 g/dL, TLC 9440/mm³, platelets 2.8 lakhs/mm³, HbA1C 5.3%, fasting blood sugar 84 mg/dL, normal renal and liver function tests). The patient was fasted for 6 hours.

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A separate maternity facility was created in the temporarily closed gynaecology OPD to prevent exposure of other pregnant patients, with area for donning and doffing personal protective equipment (PPE) and a clear exit path including showering facility and an area for newborn resuscitation.^[3-5] The Minor Operation Room (OR) was fitted with an anaesthesia workstation supplied by type E and type H gas cylinders as there was no pipeline supply. In addition, we arranged an extra suction machine, anaesthetic, uterotonic and resuscitation drugs, spinal needles, facemasks, laryngoscopes including a video-laryngoscope (Henan Touren Kingtaek Medical Devices Co. Ltd., Henan, China) with disposable blades, stylets, a transparent sheet to cover the patient, in case endotracheal intubation was required.^[3,4]

Level 3 PPE consisting of N95 respirators, impervious body suits with hoods, goggles, face visor, shoe covers and double layered medical gloves were worn by the entire team (obstetricians, anaesthesiologists, neonatologist, nursing staff and assistants).^[1,3-5] A nurse wearing PPE served as a communicator in the buffer area with a runner outside. The patient was then transferred to this facility with her face covered with a N-95 respirator through a green corridor (a pre-planned route in which all other patient and personnel movement was stopped to minimize contamination).^[3-5] Pre-anaesthetic and airway examination was done after the patient arrived in the COVID area outside the OR. She was anxious (120/min pulse rate, 120/76 mmHg blood pressure was, 97% room air oxygen saturation (SpO₂), had mild dry cough, no dyspnea. She was reassured and explained about SAB, the tachycardia settled. After attaching routine monitors (electrocardiogram, noninvasive blood pressure, SpO₂), a 20G IV cannula was secured, anti-aspiration prophylaxis given and patient preloaded with 500 ml Ringer's lactate. With patient sitting up, SAB was administered in the L3-4 interspace. Two attempts (L3-4 space midline, L2-3 interspace paramedian) using a 25G Quincke needle had resulted in dry tap therefore a 23G Quincke needle was used. A block level up to T4 was achieved with 1.8 ml hyperbaric bupivacaine and 20 µg fentanyl (total 2.2 ml). Five minutes post block, patient developed hypotension (90/50 mmHg, heart rate of 80 beats/minute) associated with nausea that responded to 6 mg IV ephedrine and 300 ml fluid bolus. Thereafter haemodynamics remained stable. A healthy baby was delivered within 10 minutes of block, cried immediately and had 5 minutes Apgar score of 9. The surgery lasted for 90 minutes and

estimated blood loss was 800-1000 ml. The mother was transferred to designated recovery room within the COVID area and looked after by the same residents and nursing staff. The baby was breast-fed. Once the Bromage score was 3 (about 135 min after the SAB), the patient was transferred back to her room. All team members exited the area after doffing under supervision.

The baby was handed over to the mother for nursing. She was instructed to keep on the N-95 respirator and maintain hand hygiene. The baby was tested on day 10 and 14 after birth using reverse transcriptase-PCR and was negative both times. The mother was tested on day 14, 21, 22 post surgery and discharged home with the baby after 2 negative reports.

DISCUSSION

Our institution is a referral centre for high-risk obstetrics and while an earmarked COVID hospital was being setup, a stand-alone COVID-maternity facility was created in the main hospital in case a COVID suspect or positive mother arrived and required immediate care.

The separate facility consisted of a Labour room, OR and recovery area with adequate space for donning and doffing of PPE by the health care workers. However, as the air handling units (AHU) in our hospital circulate air for an entire wing, the AHU and central air conditioning had to be turned off and exhaust fans fixed in this third floor, isolated area. Ideally, the facility for negative pressure venting of air should be available to prevent virus dissemination and this was readied later.^[3,4]

An elective LSCS was considered to be the safest option for this patient, as induction of labour and vaginal delivery would require more personnel and PPE. There were also concerns of excessive aerosol production due to hyperventilation during labour.

In addition an elective procedure would avoid an emergency LSCS and need for general anaesthesia and tracheal intubation. In case needed, tracheal intubation should be done as an elective rather than emergency procedure to increase first-pass success and minimize aerosol generation.^[1-3] Another reason for LSCS is the emerging evidence of vertical transmission during vaginal delivery.^[6]

The Society of Obstetric Anaesthesia and Perinatology has recommended avoidance of emergency deliveries

in COVID-19 parturients as much as possible.^[7] In the present case, the fetus was in an oblique lie at term, which is usually managed by LSCS in our hospital.

The well-fitting N95 respirator on the patient and creating a green corridor for transfer ensured minimum virus dissemination.^[5] The pre-anaesthetic assessment was done once the patient was received in the COVID area as there is need to preserve PPEs.^[1-4] In order to assess patient's Mallampati oropharyngeal grade, we asked her to lift the N95 respirator and stick out her tongue. Retrospectively we wondered if this was prudent, as this can lead to viral dissemination. This could have been avoided, as we know that a term pregnant patient can have a higher Mallampati grade^[8] and a video laryngoscope was available.

Recent papers have described the safety of central neuraxial blocks for COVID-positive obstetric patients requiring caesarean section.^[5,9] One paper describes the use of SAB^[9] whereas another describes use of epidural or general anaesthesia for these parturients.^[5]

We planned for SAB to decrease chances of aerosolization during preoxygenation, facemask ventilation, endotracheal intubation, oral or tracheal suctioning and extubation.^[1-4] Diminished visibility due to fogging, triple layers of gloves (sterile gloves over the 2 pairs that were a part of PPE) may have hindered tactile perception leading to failed attempts and dry tap with the 25G spinal needle. A 23G needle may have helped in better assessing dural puncture. We did not observe excessive hypotension as reported in a case series in parturients receiving continuous epidural anaesthesia for LSCS.^[5]

It has been reported that 2.7% anaesthetists (1/37) with Level 3 PPEs developed polymerase chain reaction (PCR) confirmed COVID-19 infection versus 57.1% (4/7) anaesthetists who had Level 1 protection when administering SAB to mildly symptomatic COVID-positive parturients.^[9] Therefore Level 3 PPE was used and is recommended.

To conclude, during the COVID-19 pandemic, we need to modify routine practices to ensure safety of the mother and baby while judiciously using resources (PPEs, manpower, designated areas).

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for

his/her/their images and other clinical information to be reported in the journal. The patient understand that her name and initials will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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