

Anesthetic Management of Cesarean Section for A Covid-19 Positive Patient: Case Report

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ABSTRACT

Background: Covid19 infection became one of the most widespread respiratory tract infections worldwide. The pandemic lastly spreading in Egypt made a great challenge for the health workers of different specialties. Anesthetists had to solve difficult problems related to the infected patients requiring surgical interventions and to make the balance between patient safety and medical team protection during the procedure. **Objective:** This study aimed to check for clear guideline protocol for anesthetic management of Covid-19 cases undergoing cesarean section, here is a case presentation for a twins pregnant patient.

Case presentation: Female patient 32 years old diagnosed as covid-19 positive prepared for cesarean section for delivery of preterm twins with CT finding corads 5, clinically presented by acute respiratory distress syndrome (ARDS). The patient received spinal anesthesia associated with tap block, oxygenation was done by closed circuit system of the anesthesia machine with partial closure of adjustable pressure limiting (APL) valve and hypotension was managed by noradrenaline infusion during the procedure.

Conclusion: Combined spinal anesthesia with tap block was the most successful modality for anesthesia for cesarean section (CS) in severe cases of covid-19 infected patients.

Keywords: Anesthetic management, Cesarean section, Covid-19.

INTRODUCTION

In spite of the theoretical expectation of increased risk of infection with covid-19 among pregnant females in comparison with non-pregnant females, there is no enough data to prove this⁽¹⁻³⁾. On the same side, there is no enough data to prove that a worse clinical picture will be found in a pregnant woman compared to non-pregnant one if both got the infection at the same time.

Pregnant females with covid-19 infection are more liable for obstetric complications involving CS, eclampsia, preterm labor and intrauterine fetal death^(4, 5). There is no clear guideline protocol for anesthetic management of covid-19 cases undergoing cesarean section, here is a case presentation for a twins pregnant patient.

CASE REPORT

A female patient 32 years old with history of primary infertility for seven years for gynecological causes presented by fever, myalgia, and respiratory distress during the third attacking wave of covid-19 infection in Egypt. Nasopharyngeal and oropharyngeal swabs were done to ensure the suspected diagnosis of covid-19. The CT findings were corads 5 with bilateral lung infiltration (Figure 1). On arrival to hospital the patient condition was as the following:

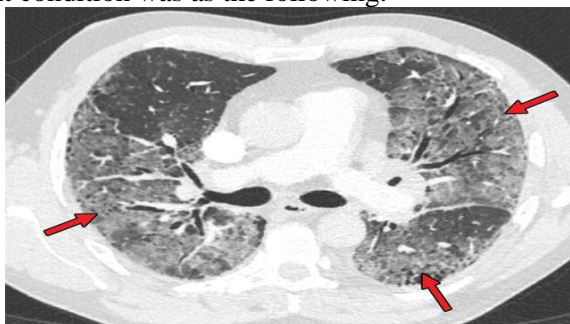


Figure (1): CORADS (5) CT chest findings.

Fully conscious, irritable with facial look of respiratory distress (working Ala Nasi), HR130 beat/minute, regular, average pulse volume, BP = 110/80 mmHg, RR = 30/minute, temperature = 39°C and SPO₂ = 75% on room air.

CT chest showed bilateral lung infiltrate (corads 5), arterial blood gas (ABG) was PH 7.42, PCO₂ = 30 mmHg, PO₂ = 40 mmHg and HCO₃ = 21 mEq/L.

Patient was immediately admitted to intensive care unit (ICU) on isolation unit that was noninvasive ventilation using continuous positive airway pressure (CPAP) mask started to find good response and marked improvement of oxygenation and respiratory distress. Three days later after admission, obstetricians decided to terminate pregnancy based on the bad general condition of the mother and the babies.

Patient was then referred to the operative room for purpose of cesarean section and termination of pregnancy.

Medical team protection was in the form of n95 respirator, face shield, gown, overhead and gloves according to international protection guidelines against covid-19 infection.

The challenge was the choice of anesthetic modality in her condition as regards hypoxia, lung affection and respiratory distress.

Oxygenation started by the bag and mask of the anesthesia machine and partial closure of the APL valve was done to maintain peep on 10 cm H₂O, oxygen saturation after this maneuver was 88%.

Monitoring was in the form of pulse oximetry, non-invasive blood pressure (NIBP), electrocardiography (ECG), Capnography and invasive blood pressure (BP) monitoring system.

500 cc of normal saline were give as a bolus over 30 minutes-duration to maintain a normo-volemic state.

Spinal anesthesia was given (bupivacaine 0.5%, 7 mg were given and 200 mic morphine added as adjuvant to bupivacaine.

After induction of spinal anesthesia patient started to be distressed with no more hypoxia, ketamine 0.5 mg/kg was given for sedation.

Ultrasound guided tap block was given using 20 ml of bupivacaine 0.25% on each side to help in anesthesia and post-operative analgesia.

Hypotension started after two minutes of spinal anesthesia (mean ABP was 40 mmHg), levophrine infusion started at once at dose of 0.5 mic/kg/min, which was enough for maintenance of normal BP all around the operation.

The surgical procedure started by fenestral incision followed by delivery of the twins, the babies were distressed and resuscitation started at once by pediatrics team, marked improvement of haemodynamics occurred after delivery of the babies in form of elevation of BP and improvement of tachycardia, reduction of noradrenaline infusion dose to 0.3 mic/kg/min.

Total fluids given were 1000cc of normal saline infused over 40 minutes-duration.

At the end of operation patient was transferred to ICU by oxygen mask with reservoir bag where noninvasive ventilation continued and noradrenaline was gradually withdrawn, and completely stopped after 2 hours. Patient retained her motor power of lower limbs after two hours from spinal anesthesia.

DISCUSSION

The severity of your case is the main determinant of your anesthetic plan in covid-19 patients, as a general rule, regional anesthesia is more preferred than general anesthesia for many causes. First it is less associated with respiratory complications, then less risk of infection for medical team when you use closed circuit face mask that will provide good oxygenation and minimize spread of patient aerosol, partial closure of APL valve of anesthesia machine will provide positive end expiratory pressure according to the number on the pressure gauge, this peep will help improvement of oxygenation during surgery.

The obstetricians who decide whether pregnancy can be continued or not according to the clinical severity. Mild cases can continue their pregnancy up to full term while severe cases are terminated for purpose of mother safety^(6,7).

Tap block under ultrasound guidance provides an excellent adjuvant to spinal anesthesia during anterior abdominal surgeries. The main advantage in our case was to minimize the dose of intrathecal local anesthetic, thus minimizing its side effects. Also, it provided an excellent analgesic postoperative. Thus, there was no need for postoperative opioids that can lead to respiratory depression.

Intraoperative sedation was avoided for severe cases to prevent respiratory depression. However, a low dose of ketamine 0.25 mg/kg was used in this case to prevent patient apprehension and it didn't cause respiratory depression.

Intraoperative complications detected was mainly hypotension, noradrenaline infusion was the most rapid and effective method for management. The choice of early vasopressor infusion was to prevent severe hypotension that can lead to medullary ischemia and respiratory depression in a patient already was suffering from respiratory failure.

As regards postoperative care of our patient, she was transferred to isolation ICU with oxygen mask with reservoir bag attached, under full monitoring and oxygen saturation was about 85% on reservoir. In the ICU she was ventilated by CPAP mask. She required two hours until lower limbs motor was established.

CONCLUSION

Combined spinal anesthesia with tap block was the most successful modality for anesthesia for cesarean section (CS) in severe cases of covid-19 infected pregnant patients.

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REFERENCES

1. **Rothe C, Schunk M, Sothmann P et al. (2020):** Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. *N Engl J Med.*, 382: 970–71.
2. **Wu Z, McGoogan J (2020):** Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: Summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *JAMA.*, 323: 1239-1242.
3. **Liu D, Li L, Wu X et al. (2020):** Pregnancy and perinatal outcomes of women with coronavirus disease (COVID-19) pneumonia: A preliminary analysis. *Am J Roentgenol.*, 2015: 127-132.
4. **Mullins E, Evans D, Viner R et al. (2020):** Coronavirus in pregnancy and delivery: Rapid review. *Ultrasound Obstet Gynecol.*, 55: 586–82.
5. **Schwartz D (2020):** An analysis of 38 pregnant women with COVID-19, their newborn infants, and maternal-fetal transmission of SARS-CoV-2: Maternal coronavirus infections and pregnancy outcomes. *Arch Pathol Lab Med.*, 144: 799-805.
6. **American College of Obstetricians and Gynecologists (2020):** COVID-19 FAQs for obstetricians-gynecologists, obstetrics. Washington, DC: ACOG. <https://www.acog.org/clinical-information/physician-faqs/covid-19-faqs-for-ob-gyns-obstetrics>
7. **Wang C, Horby P, Hayden F et al. (2020):** A novel coronavirus outbreak of global health concern. *Lancet*, 395: 470–73.