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Available online at: http://www.iajps.com *A Case Report*

REGIONAL ANESTHESIA AS A SAFE ALTERNATIVE IN A COVID-19 PNEUMONIA PATIENT: A CASE REPORT

Asfandiar Shah Rukh Hijaz

Registrar, Anesthesia-St James's University Hospital, Ireland

Abstract:

General anesthesia in patients with active COVID-19 pneumonia carries significant risks, including hypoxemia, aerosol generation, and postoperative pulmonary complications. A 58 years old male with confirmed COVID-19 pneumonia underwent urgent right lower limb surgery under ultrasound guided spinal anesthesia. Avoiding general anesthesia reduced airway manipulation, maintained respiratory stability, and prevented postoperative deterioration. Regional anesthesia can be a safe and effective alternative to general anesthesia in selected COVID-19 pneumonia patients, minimizing respiratory risk and viral aerosolization.

Corresponding author:

Asfandiar Shah Rukh Hijaz

Registrar,

Anesthesia-St James's University Hospital,

Ireland

QR CODE

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INTRODUCTION:

COVID-19 infection presents unique challenges in anesthetic management. General anesthesia often requires airway instrumentation, which can exacerbate hypoxemia and significantly increases aerosol generation, putting healthcare workers at risk [1,2]. Regional anesthesia has been recommended when feasible because it avoids airway manipulation, preserves respiratory function, and may reduce postoperative pulmonary complications [3-5].

This report presents a COVID-positive patient with pneumonia successfully managed with spinal anesthesia for urgent orthopedic surgery.

CASE REPORT:

A 58-year-old male with a BMI of 29.5 kg/m² presented with a closed intertrochanteric fracture of the right femur after a fall at home. His medical history included hypertension and type 2 diabetes mellitus, and he reported no smoking or alcohol use. He had tested positive for COVID-19 by RT-PCR five days earlier and had experienced cough, dyspnea on exertion, and low-grade fever.

On admission, his vital signs showed a temperature of 37.8°C, heart rate of 92 bpm, blood pressure of 138/84 mmHg, respiratory rate of 22 breaths per minute, and an SpO_2 of 92% on room air, which improved to 95% with 2 L/min oxygen. Chest examination revealed bilateral crackles, more prominent at the bases, and CT imaging demonstrated bilateral ground-glass opacities consistent with moderate COVID-19 pneumonia. Laboratory investigations showed elevated CRP (48 mg/L), ferritin (510 ng/mL), D-dimer (0.8 mg/L), and lymphopenia, while ECG revealed normal sinus rhythm. Although he was considered moderately ill, he remained stable enough for surgery, and urgent operative fixation was recommended to reduce morbidity associated with hip fractures.

Given his respiratory compromise, general anesthesia was deemed high-risk due to reduced pulmonary compliance and the potential need for postoperative ventilatory support. Regional anesthesia was preferred because it avoids aerosol-generating intubation, reduces hypoxemia risk in COVID-19 pneumonia, and is associated with better postoperative respiratory outcomes.

The procedure was performed in a negative-pressure operating room with full airborne precautions. A single-shot spinal block was administered at the L3–L4 level using 0.5% hyperbaric bupivacaine (2.8 mL) with 20 µg of fentanyl, achieving a T8 sensory level without hemodynamic instability. Supplemental oxygen was provided at 2 L/min under a surgical mask, and continuous pulse oximetry and capnography were used throughout the 65-minute operation. The surgery proceeded uneventfully, and no conversion to general anesthesia was required.

Postoperative recovery was uncomplicated. The patient maintained an SpO_2 of ≥94% on 1–2 L/min oxygen and experienced no episodes of desaturation, respiratory distress, or need for ICU support. Pain was well controlled with multimodal analgesia, and he was able to mobilize on the first postoperative day. He was discharged home on postoperative day four with stable vital signs and improving respiratory symptoms. At a 14-day telemedicine follow-up, he reported continued improvement in breathing and no complications related to anesthesia or surgery.

DISCUSSION:

COVID-19 pneumonia poses unique anesthetic challenges, especially regarding airway management and respiratory function. Regional anesthesia avoids airway instrumentation, which is considered the highest-risk event for aerosol exposure and viral transmission [1,2].

Benefits of Regional Anesthesia in COVID-19

1. **Reduces aerosol generation:** Spinal and peripheral nerve blocks eliminate the need for intubation and mechanical ventilation [3].
2. **Preserves pulmonary function:** COVID-19 pneumonia causes impaired gas exchange and low lung compliance; regional anesthesia avoids these stresses [4,6].
3. **Improves postoperative outcomes:** Studies show fewer pulmonary complications and less ICU admission when regional anesthesia is used in respiratory-compromised patients [5,7].
4. **Minimizes drug-induced respiratory depression:** Avoids sedatives and opioids required for general anesthesia [8].

The patient had moderate COVID-19 pneumonia and reduced respiratory reserve. Using spinal anesthesia prevented perioperative hypoxemia and avoided the risk of postoperative mechanical ventilation. No conversion to general anesthesia was needed, and the patient recovered without pulmonary deterioration. This supports the growing evidence that regional anesthesia is an important strategy for COVID-positive surgical patients when appropriate.

CONCLUSION:

This case demonstrates that regional anesthesia is a safe, effective alternative to general anesthesia for selected COVID-19 pneumonia patients undergoing urgent surgery. Avoiding airway instrumentation

reduces both patient risk and provider exposure. Regional techniques should be considered whenever feasible during the perioperative management of COVID-19 positive patients.

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