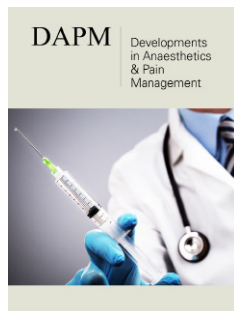


# Knee Arthrotomy in a COVID Infected Elderly Patient: An Anesthetic Challenge

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## Abstract

Regional anesthesia for a COVID 19 patient significantly reduces the viral transmission to the healthcare workers and also reduces the respiratory complications. We report a case of septic arthritis of the knee in a patient with COVID-19 pneumonia, lumbar spondylolisthesis and metabolic encephalopathy managed successfully solely under femoral and sciatic nerve block.

**Keywords:** COVID-19; Femoral nerve block; Sciatic nerve block

## Introduction

The current pandemic has challenged the Anesthesiologists in providing safe anesthesia to COVID infected patients and at the same time protecting the healthcare workers from possible exposure. The joint guidelines by American and European Society of Anesthesiologists recommend the use of Regional Anesthesia (RA) whenever possible [1-4]. The advantages of RA in these patients are avoidance of airway instrumentation, aerosol generation and dispersion. We report the successful management of an elderly COVID positive patient with multiple co-morbidities scheduled for knee arthrotomy.

## Case History

A 69 year old gentleman presented to the casualty with weakness in both legs and left knee pain for 15 days. He had a history of fall on the morning of hospitalization and altered sensorium. He was detected to be COVID positive in the hospital. The left knee examination revealed limited joint movements, swelling and tenderness. Further evaluation revealed left sided grade 2 facial palsy, new onset cervical dystonia and L4-L5 grade 1 spondylolisthesis with canal stenosis. The chest x-ray was suggestive of COVID-19 pneumonia. Magnetic resonance imaging of the brain was normal. His sodium level was found to be 159mEq/L. A provisional diagnosis of moderate COVID-19 pneumonia with metabolic encephalopathy and septic arthritis of the left knee was made. The patient was empirically started on inj. Meropenem and Inj. Vancomycin. Hospital COVID protocol treatment and correction of hypernatremia were initiated. Electrocardiogram revealed sinus tachycardia with ventricular premature contractions every fourth beat however echocardiogram was a normal study. Blood culture and synovial fluid culture were positive for methicillin resistant staphylococcus aureus. He was scheduled for arthroscopy and/or arthrotomy of the left knee.

On the day of surgery the patient was conscious and oriented but was slightly irritable. Pre-operative sodium level was optimized to 144mEq/L. Other investigations were within normal limits. An informed consent was obtained from the family explaining the probable need of post-operative ventilatory support in view of age, COVID infection and metabolic encephalopathy. On arrival to the operation theatre, standard monitoring was applied to the patient. Intravenous balanced salt solution was initiated via a 22G cannula secured in the right forearm. The patient was explained RA plan in detail again and his co-operation

was sought. The room air saturation was 92% and oxygen was supplemented via nasal prongs at 2 liters/minute under a tight fitting N95 mask. An ultrasound guided in plane Femoral Nerve Block (FNB) was performed at the left inguinal crease using a high frequency linear probe (6-13MHz) using a 22G, 100mm needle. Dual confirmation by patellar twitch at <0.5mA was obtained. After negative aspiration 10ml of the Local Anesthetic Agent (LAA) (2% lignocaine adrenaline 5ml and 0.5% ropivacaine 5ml) was injected around the nerve. The left knee could then be flexed to perform the sciatic block at the popliteal region under ultrasound guidance as there was good analgesia subsequent to the FNB. The sciatic nerve was then identified in the popliteal fossa. After dual confirmation of the sciatic nerve with twitch at <0.5mA the LAA (2% lignocaine with adrenaline 10ml and 0.5% ropivacaine 10ml) was injected around the nerve just proximal to its branching into the Common Peroneal Nerve (CPN) and Tibial Nerve (TN) and good spread of the drug visualized. Excellent analgesia was achieved in 15 minutes. An arthrotomy was done using a 15cm incision over the left knee and a thorough wash of the joint space was done. The patient was very comfortable, hemodynamically stable and saturation was maintained throughout the procedure. He did not require any additional analgesics. The surgery lasted for an hour following which the patient was shifted to his room. The analgesia from the RA block lasted 12 hours and Inj. paracetamol 1 gram was administered for analgesia. Patient was discharged 5 days post-operatively.

## Discussion

Anesthesiologists frequently provide anesthesia for COVID infected surgical patients. Operation theatre is one of the hot zones in disease transmission. Anesthesiologists play a vital role in minimizing the aerosol generation during airway instrumentation and reducing the risk of transmission to the healthcare workers. The transmissibility of acute respiratory infection is 6.6 times to those who are exposed during tracheal intubation than those who are unexposed [2]. RA significantly reduces the risk of aerosol generation. Our patient had lumbar spondylolisthesis, metabolic encephalopathy and COVID-19 pneumonia, thus a higher risk for general anaesthesia and relative contraindication to spinal anaesthesia. The sensory nerve supply to the anterior knee is mainly derived from branches of the Femoral nerve, CPN and TN. The entire posterior knee capsule is innervated by TN and some contribution from the posterior branch of obturator nerve. Sciatic-femoral nerve block is a very good alternative to spinal anaesthesia for arthroscopic procedures of the knee in providing

adequate analgesia and faster recovery with no side effects of spinal anaesthesia such as hypotension, motor blockade, urinary retention and post dural puncture headache [5-7]. Thus we opted for ultrasound guided RA technique to provide complete anaesthesia and postoperative analgesia in our patient. Other advantages of regional anaesthesia are superior analgesia, no urinary retention, reduced opioid consumption thereby reducing the post-operative nausea, vomiting and cognitive dysfunction [3].

RA has shorter recovery time resulting in reduced hospital stay compared to GA and in addition avoidance of volatile anesthetics reduces the chances of decreased postoperative immunity [1]. GA has a high risk of post-operative pulmonary complications in COVID infected patients and should be avoided whenever possible. The Sciatic-femoral nerve block has been used successfully for knee arthroscopy in a COVID infected patient as a sole anesthetic [7]. Although RA has been used for knee surgeries [5,6]. the performance any procedure whilst donning personal protective equipment is challenging. Peripheral nerve blocks require increased expertise to produce successful anaesthesia and slightly longer time to achieve adequate surgical conditions An US guided block is more challenging due to difficulty in communication, impaired visualization due to fogging and poor tactile feedback.

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