

Successful Use of Regional Anesthesia for Above-the-Knee Amputation in an ASA 4 patient with Severe Right Ventricular Dysfunction and Metastatic Cancer

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INTRODUCTION

An ASA 4 patient with predicted high risk for adverse events undergoing surgery poses several challenges in undergoing a safe and successful anesthesia plan.

CASE PRESENTATION

65 year old female with past medical history significant for Hypertension, CAD s/p CABG, bioprosthetic MVR with severe prosthetic mitral valve stenosis, atrial fibrillation, CKD, CVA with baseline confusion, L ICA stenosis, IDDM2, obesity, pleomorphic liposarcoma on left thigh s/p resection with metastases to the liver, lung and bone on chemotherapy complicated by anthracycline induced cardiomyopathy and thrombocytopenia, and PAD with chronic LLE limb ischemia presented with worsening ischemic left foot with gangrene.

Recent TTE showed moderately decreased ejection fraction, severe right ventricular dysfunction with RV pressure overload, biological mitral prosthesis with severe mitral stenosis, and severe tricuspid regurgitation.

The patient was recently admitted at another hospital and was deemed not a surgical candidate due to her cardiovascular history. Cardiology stated that she needs cardiac catheterization, but she is not a candidate because she cannot be on DAPT due to thrombocytopenia and needing frequent blood transfusions.

She was transferred to our hospital for a second opinion. Vascular surgery recommended a left above knee amputation. Her hospital course was by respiratory failure and altered mental status requiring intubation and vasopressors due to sepsis from aspiration pneumonia. Patient was successfully extubated after several days. POMA was obtained. Based on the NSQIP surgical risk calculator, this patient is at high risk for adverse events (23.6% risk of mortality, 22.8% risk of serious complications) for an intermediate risk procedure. Cardiology concurred. She is classified as ASA 4.

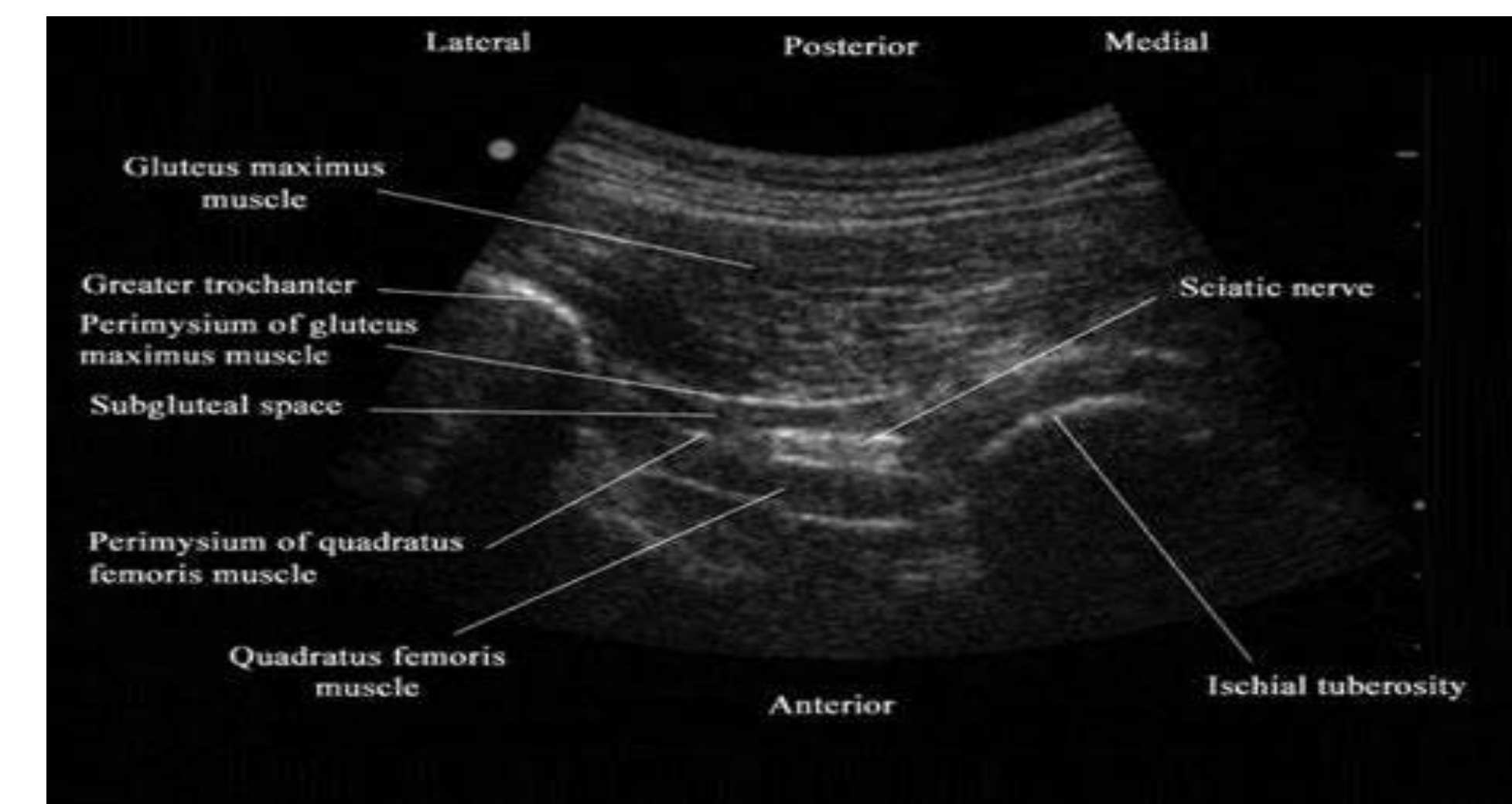
Given her comorbidities and her complicated hospital course, she is at high risk of complications from general anesthesia.

ANESTHETIC PLAN

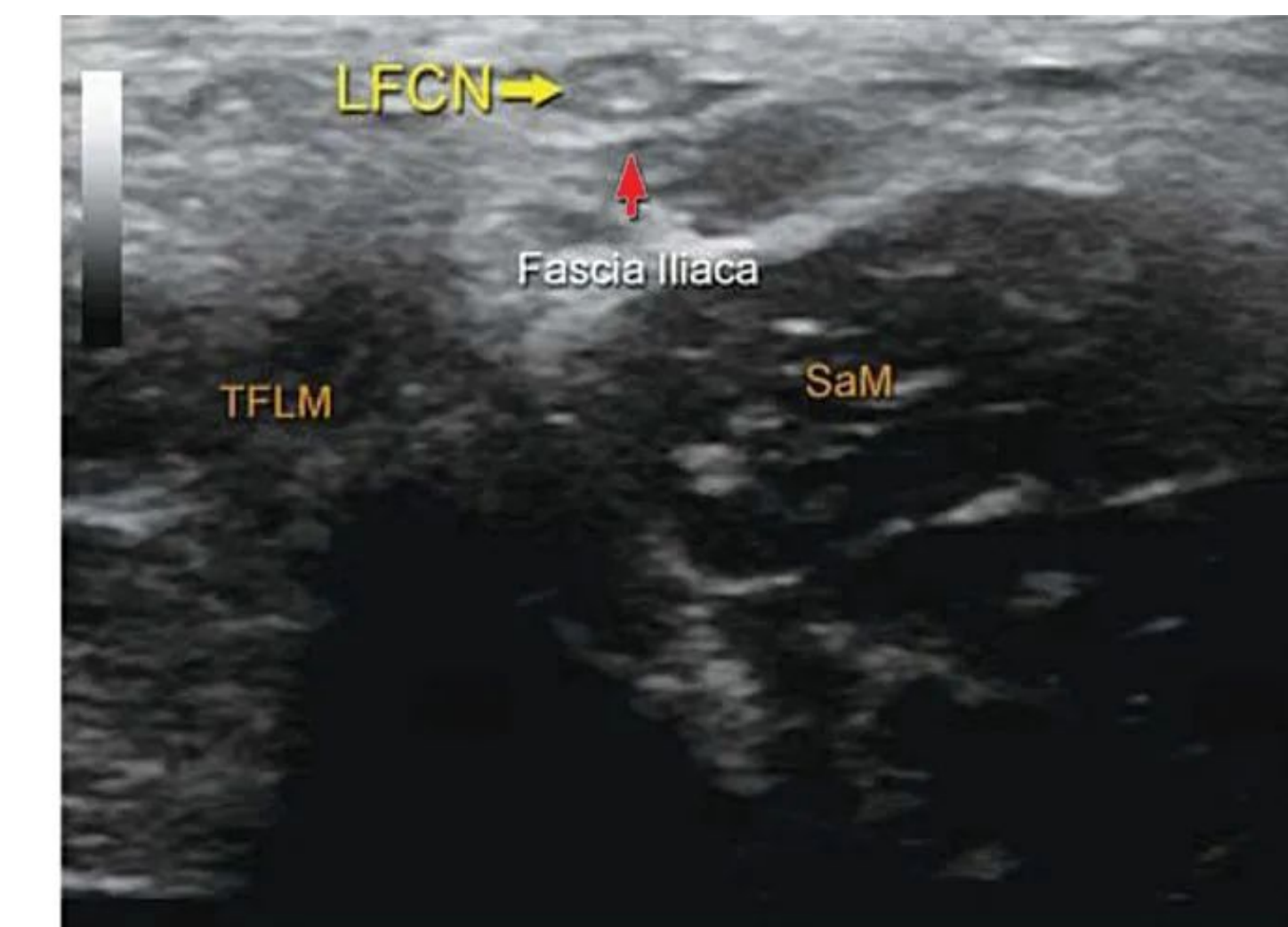
The anesthetic plan was to do a combination of regional anesthesia and MAC.

The plan was for ultrasound-guided subgluteal sciatic nerve block, femoral nerve block, and lateral femoral cutaneous nerve block. Left radial arterial line was placed. Prior to the blocks, she was given 1 mg Midazolam and 50 mcg Fentanyl. For the subgluteal sciatic block, she was given 5 ml Mepivacaine 1.5%, Ropivacaine 0.5% 15 ml. Nerve stimulator was also used for this block. For the femoral block, Mepivacaine 1.5% 7 ml and Ropivacaine 0.5% 15 ml were given. For the lateral femoral cutaneous nerve block, Ropivacaine 0.5% 5 ml was given.

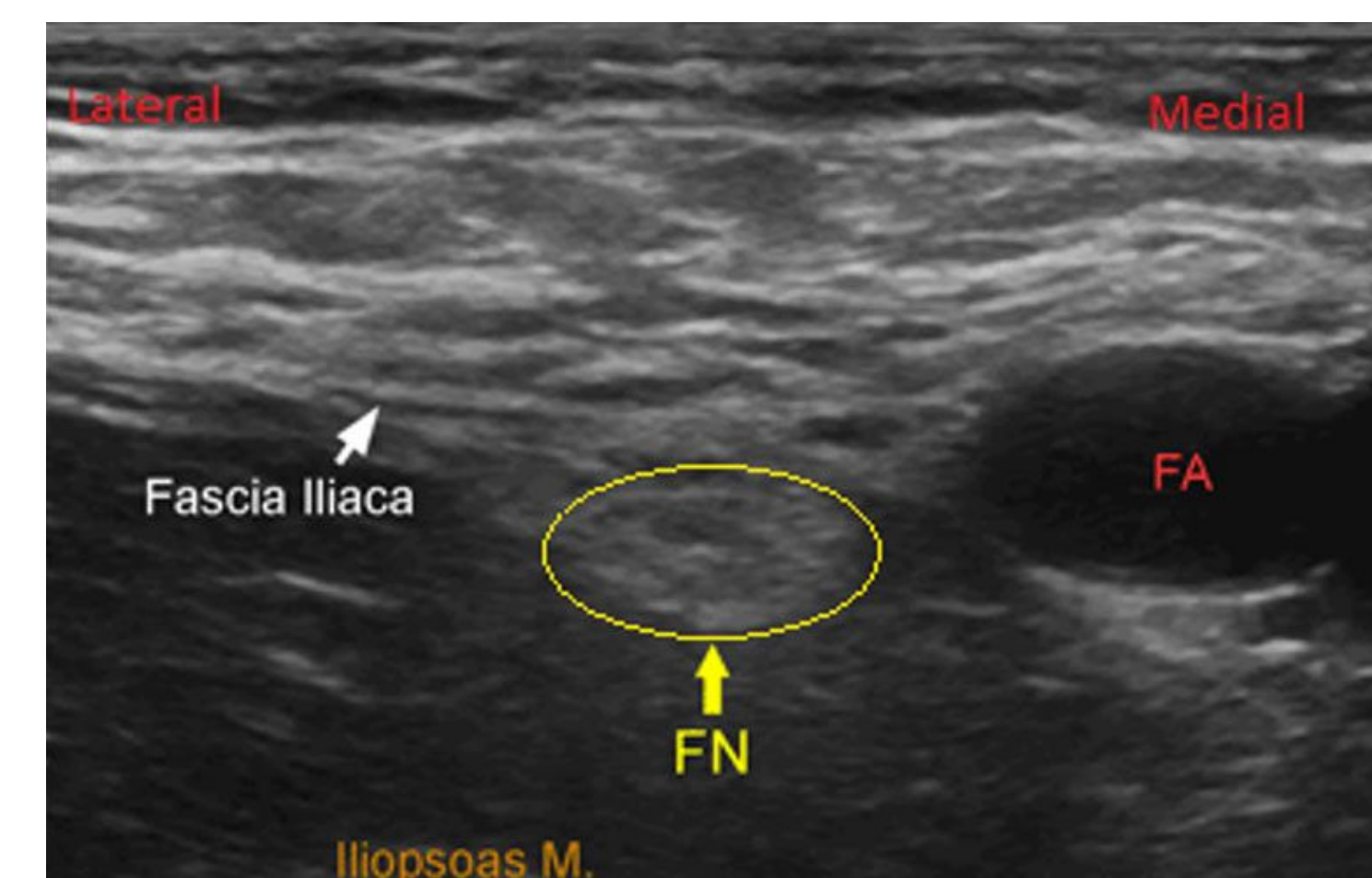
Patient was also given dexmedetomidine boluses totaling 28 mcg and Cefazolin 2 g. Intraop and post op course was uneventful with no complications. Patient denied any post operative pain.



Subgluteal Sciatic Nerve Block



Lateral Femoral Cutaneous Nerve Block



Femoral Nerve Block

DISCUSSION

With her pulmonary hypertension, she is at risk for complications such as arrhythmias, heart failure, myocardial infarction, respiratory failure, cardiovascular collapse, and more. For her mitral stenosis, anesthetic goals include maintaining the patient's preload, maintaining sinus rhythm, with a low to normal rate. For her tricuspid regurgitation, it would be essential to avoid hypovolemia, maintain sinus rhythm with a normal to high heart rate, and might require inotropic support in the event the patient is in right ventricular failure.

Successful anesthesia management would entail avoiding acidosis, hypoxia, hypercapnia, increased sympathetic stimulation, hypovolemia, and hypervolemia.

There is also the consideration that if the patient is placed under general anesthesia, if the patient would be able to receive adequate pain control, as above the knee amputations are known to be especially painful. Opioid use would have to be limited given her comorbidities. NSAID use would be avoided given her chronic kidney disease.

There was also the risk of regional anesthesia with her history of thrombocytopenia requiring multiple transfusions. A risk-benefit analysis was made to determine the safest anesthetic plan to be regional anesthesia with sedation, as the risks for general anesthesia were far greater.

The patient was not only able to successfully undergo the surgery, but also had satisfactory pain control with this anesthetic plan.

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