

A Complex Anticoagulation Plan & Lumbar Interlaminar Epidural Steroid Injection in a Patient with a Left Ventricular Assist Device (LVAD) – A Case Report

Trishul Kapoor MD, Richard Rosenquist MD

INTRO

As of 2016, the prevalence of adults living with heart failure was estimated to be over 6.2 million.¹ Once a diagnosis of heart failure is made, nearly 50% of patients die within 5 years and 90% of patients die within 10 years.¹ The complexity of clinical care increases exponentially when heart failure and chronic pain co-exist.² Unfortunately, this co-existence is increasing in prevalence.² Patients with heart failure and chronic pain are remarkably challenging to provide therapeutic analgesic relief to due to drug-drug interactions and interference with heart failure management.^{2,3} It has been demonstrated that inadequate pain control can lead to poor quality of life, increased hospitalizations, and decreased survival.^{2,3} However, to the best of our knowledge, there is no literature describing the role of interventional pain procedures in heart failure patients and management of anticoagulation regimens. In this medically challenging case report, we describe a 71-year-old male with chronic systolic heart failure with a presumed destination therapy left ventricular assist device (LVAD), on anticoagulation, who underwent a lumbar interlaminar epidural steroid injection. The anticoagulation plan for this patient was carefully constructed in discussion with a multi-disciplinary team based on ASRA Anticoagulation Guidelines and characteristics of his Heartmate 3 LVAD.

METHODS

A retrospective chart review of one patient was conducted in 2023. This study was determined to be exempt from Institutional Review Board at the Cleveland Clinic. The participant described in this study provided informed consent to be included in this case report.

RESULTS

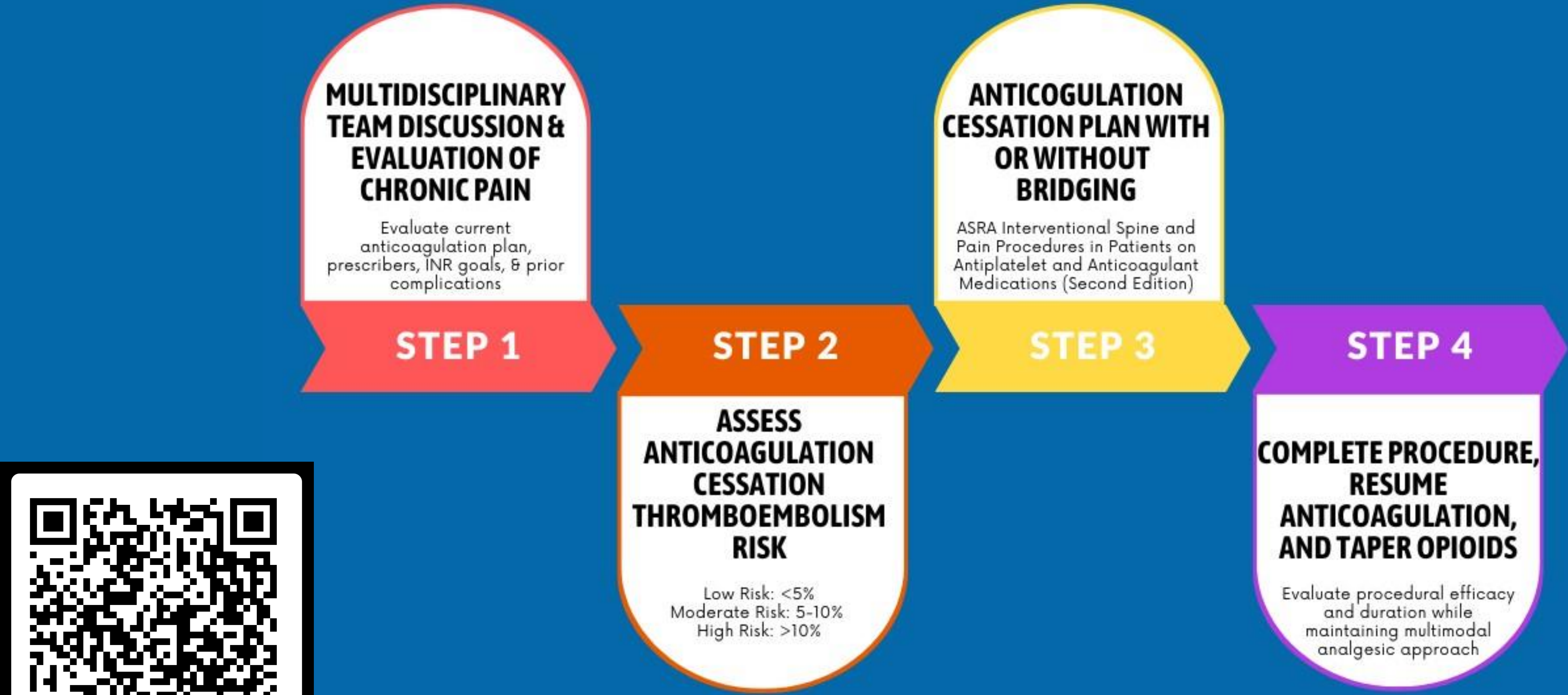
In 2022, a 71-year-old male was referred to the Cleveland Clinic Pain Management Center (PMC) for chronic severe non-radiating lower and mid-back pain. The patient’s medical history is significant for chronic systolic heart failure with a presumed destination-therapy LVAD and an implantable cardioverter-defibrillator (ICD) requiring anticoagulation with warfarin (target INR of 2.5). The patient was referred to the PMC in the hope of tapering his high dose opioid regimen in preparation for possible heart transplant candidacy.

On initial evaluation, the patient presented with severe non-radiating lower and mid-back pain that was exacerbated by standing and walking. He had moderate relief of pain with sitting and forward-flexion. The patient had minimal analgesic relief with multiple opioid prescriptions (54.5 to 218 MME per day) over the course of two years and undergone multiple procedures over the course of 6 years leading to his LVAD implant placement.

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Interventional pain procedures are a viable option for LVAD patients with chronic pain.



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His home medications included Oxycodone 15mg 1-4 times per day (22.5 to 90.0 MME per day), Hydromorphone 8mg 1-4 times per day (32 to 128 MME per day), Methocarbamol 1000mg BID, and Duloxetine 40mg daily. On physical exam, he had moderate tenderness to palpation over the lower thoracic and lumbar paraspinal muscles. Pain was elicited with back extension and lateral extension. Straight leg raising test was positive. He had decreased sensation to touch on the medial aspect of the right and left foot (heel to great toe). He demonstrated symmetric right and left, upper and lower extremity strength.

He previously had an MRI of the lumbar spine completed in 2020. The scan demonstrated a 1.3 cm left lateral subluxation of L3 on L4 with severe loss of disc height at L3-L4 and L5-S1. There was significant hypertrophy of the ligamentum flavum (measuring 5.2mm) at L4-L5. Furthermore, at L2-L3, L3-L4, L4-L5, there was moderate central canal and neuroforaminal (right and left) stenosis due disc osteophyte complex, broad-based disc bulge, endplate hypertrophy, and hypertrophic changes in the facet joints. As a follow-up, he underwent a CT of the lumbar spine in 2022. The scan demonstrated progression to severe right and left neuroforaminal narrowing at L2-L3, L3-L4, L4-L5, L5-S1.

The patient was instructed to hold his warfarin 5 days prior to the scheduled procedure and begin therapeutic enoxaparin injections, twice daily, until 24 hours prior to the scheduled procedure. An interlaminar epidural steroid injection (IESI) was attempted at the L3-L4 interspace, but was unsuccessful due to severe dystrophic interlaminar calcification in the setting of scoliotic torsion. The patient underwent a successful and uncomplicated L2-L3 IESI with a mixture of 40mg of preservative-free methylprednisolone and normal saline. The patient had no evidence of epidural hematoma, cerebrospinal fluid leak, or LVAD malfunction. The patient was instructed to resume his enoxaparin injections and warfarin 24 hours following the procedural intervention. The patient was contacted 5 days after the procedure and reported having 75% analgesic relief as a result of the L2-L3 IESI.

CONCLUSION

Chronic pain and heart failure are growing in prevalence in the United States. Interventional pain procedures should be evaluated as a viable option for this patient population while designing a careful anticoagulation strategy to minimize the dual risk of procedural hematoma and pump failure or stroke.

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