

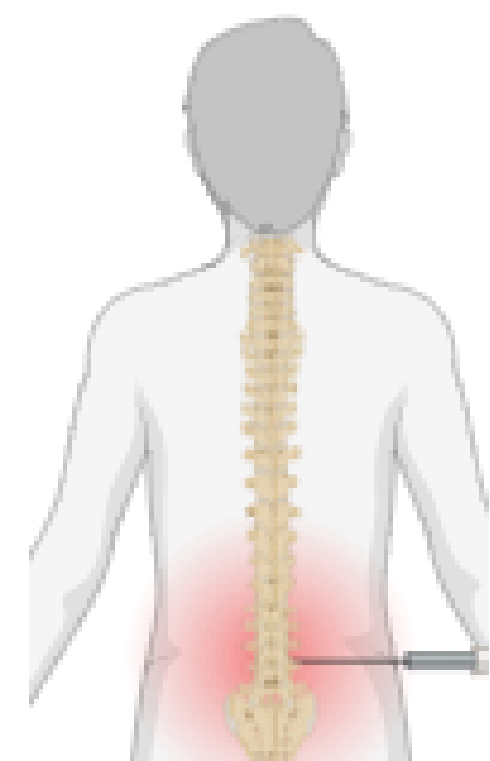
Safe and Effective Intraosseous Basivertebral Nerve Radiofrequency Neurotomy in a Patient with a Permanent Pacemaker

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Introduction

- Radiofrequency neurotomy (RFN) is effective for chronic low back pain (CLBP)
- However, there is a risk of electrical interference with Cardiovascular Implanted Electronic Devices (CIEDs) such as pacemakers^[1]

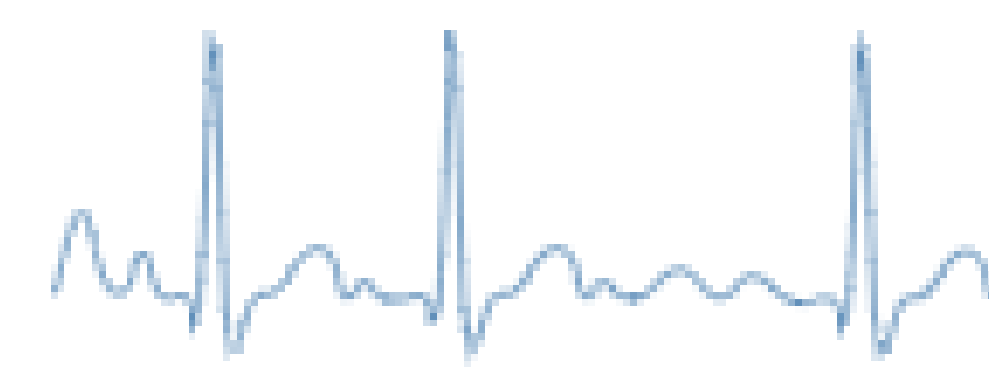


Clinical Significance

Radiofrequency neurotomy of the basivertebral nerve is currently considered contraindicated in patients with active cardiovascular implanted electronic devices.^[2] Our successful outcome shows this can be done safely with appropriate perioperative precautions.

Patient Characteristics

- Elderly male with 10+ years CLBP that had failed medical and surgical interventions
- Medical history includes symptomatic bradycardia s/p pacemaker placement



Physical Exam

Pain in all planes of motion and with axial loading	Absent bilateral ankle and medial hamstring reflexes	Difficulty with heel raises and a wide-based antalgic gait	Pain with sitting and forward flexion
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Imaging

- MRI findings included:
 - Lumbar spondylosis at L5-S1 with stable spondylolisthesis at L3-L4
 - Multilevel lumbar degenerative disc disease at T11-T12 and L2-S1
 - Vertebral endplate changes consistent with Type 2 Modic changes noted in L3-S1
 - Schmorl's nodes identified at the inferior endplate of L3-L4



Timeline of Therapeutic Trials

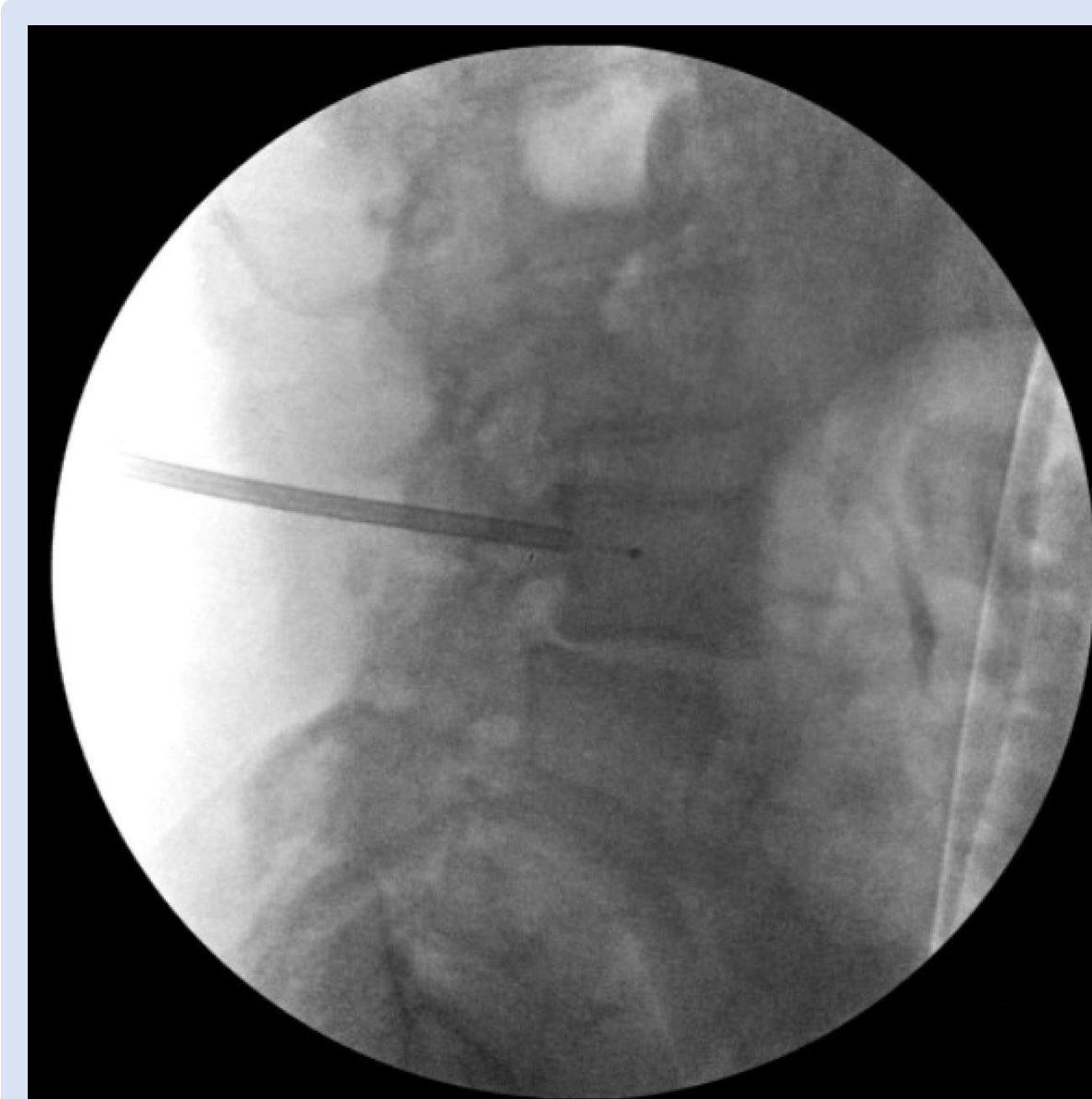
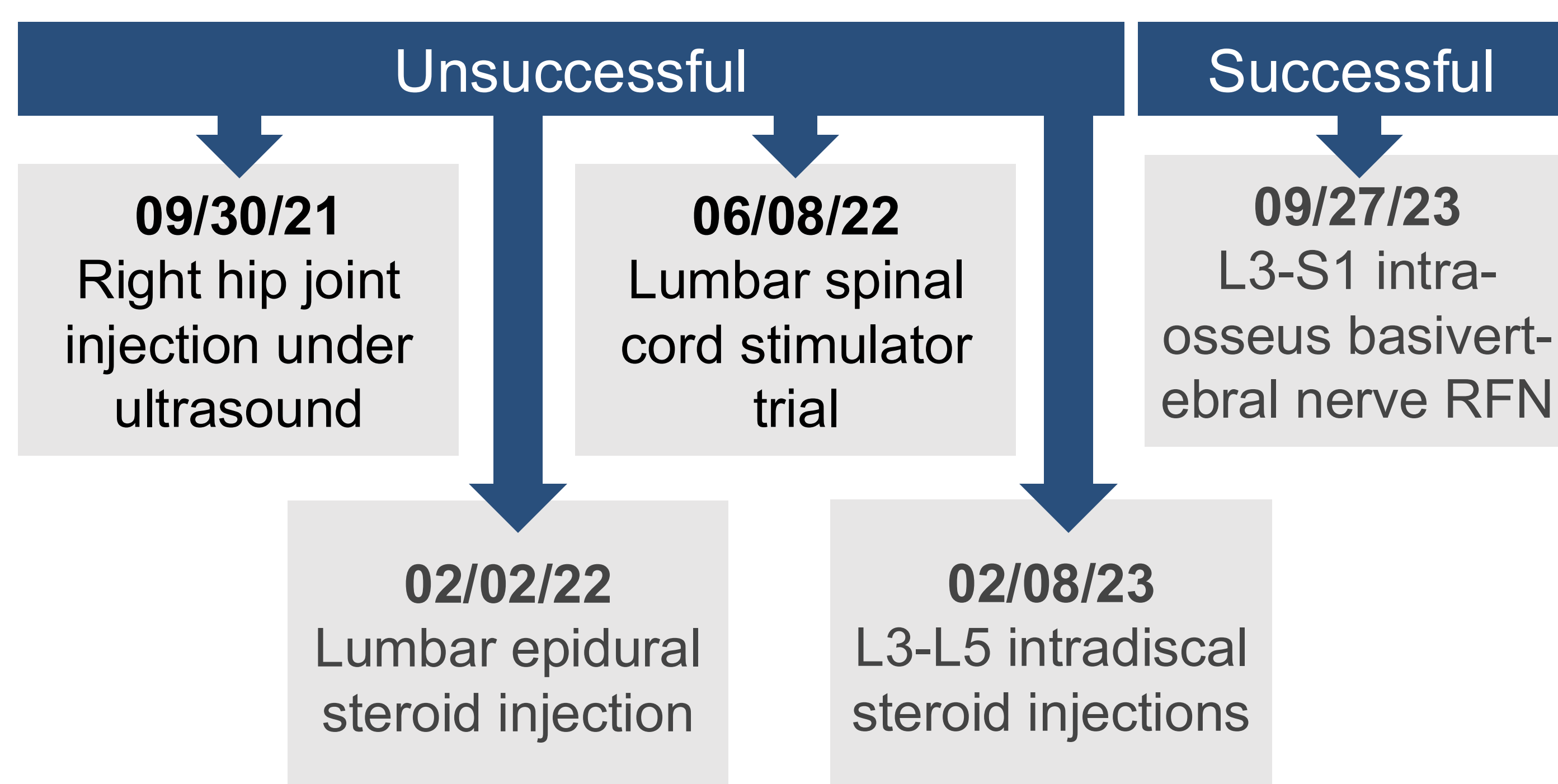
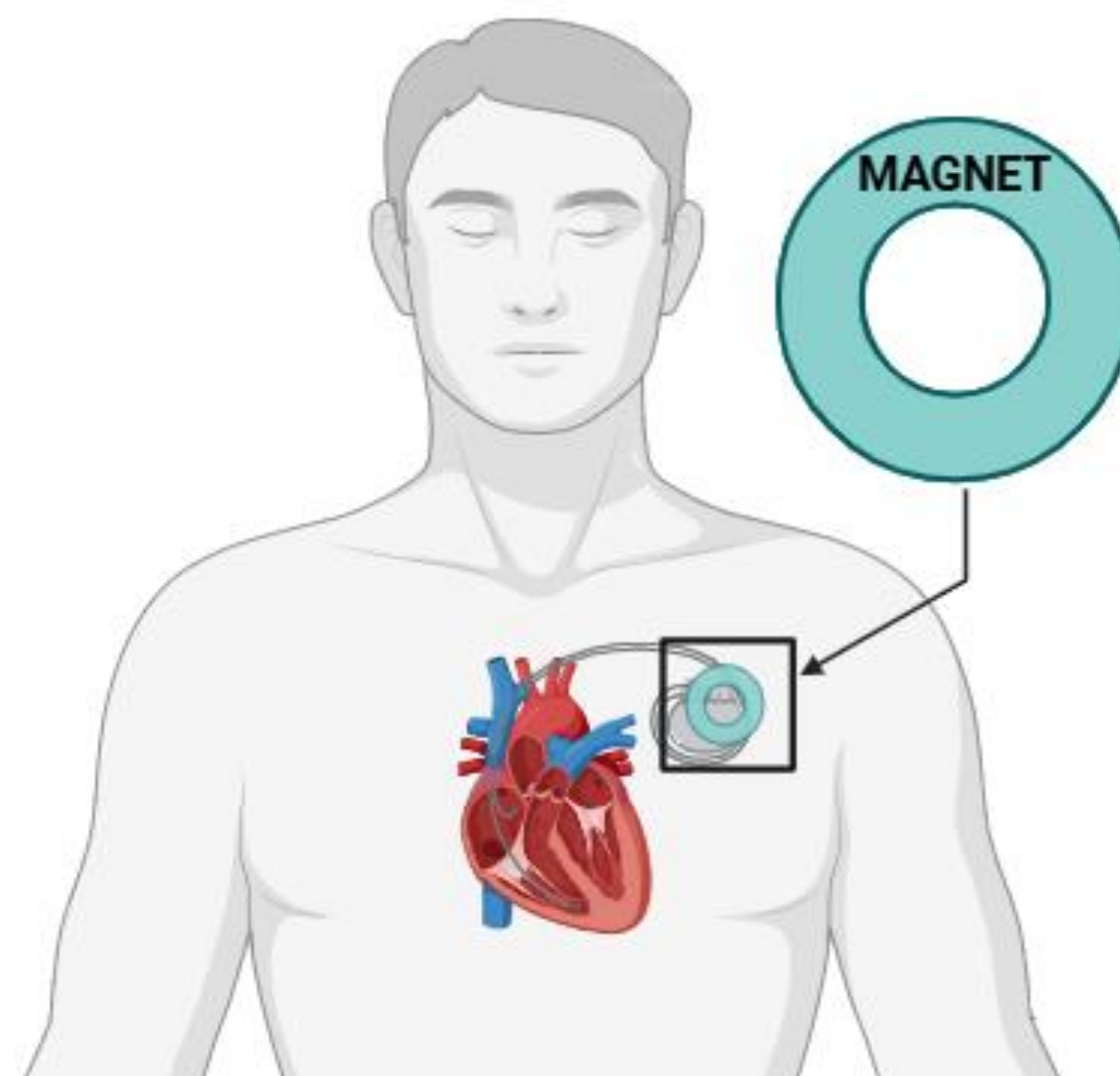


Figure 1. AP and lateral intraoperative fluoroscopy showing successful introduction of the bipolar RFN probe into the L3 vertebrae prior to ablation

Pacemaker Mode Switching



- Magnet application allows conversion of most implanted pacemakers to asynchronous pacing, limiting the chance of electrical interference^[3]
- This combined with the localized effect of bipolar RFN contributes to safety perioperatively^[4,5]

Discussion

- Key safety factors
 - Bipolar energy
 - Intact cortex as an insulator^[6-9]
- Immediate next steps
 - Limited safety data, need for further case series
 - Lack of firm standards on perioperative considerations
- Future clinical implications
 - Investigation is warranted to replicate safety in this population and for other implanted neurostimulators such as in Parkinson's Disease



Primary Finding

This is the first published case demonstrating safe application of bipolar basivertebral RFN for a patient with an active CIED.

References

- Full reference information can be found at the following QR code:

