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

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Case Diagnosis
Vertebrogenic low back pain

Case Description
A 78-year-old male with chronic low back pain (CLBP) presented to our Interventional Pain Management clinic after failing conservative and operative management for pain in his distal low back, buttock, and groin. Physical examination revealed pain in all planes of motion and with axial loading, absent ankle and medial hamstring reflexes, difficulty with heel raises, and a wide-based antalgic gait. Our differential based on the patient's lumbar MRI included degenerative disc disease, zygapophysial joint arthropathy and vertebrogenic pain. Based on his suboptimal response to multiple interventions including a spinal cord stimulator trial, we determined vertebrogenic low back pain was the most-probable diagnosis. After a risk-benefit discussion and preoperative cardiac consultation, the patient underwent basivertebral nerve ablation using a magnet to convert his pacemaker to asynchronous pacing perioperatively. The procedure was successful with sustained improvement of his CLBP at six-month follow up.

Discussion
Intraosseous basivertebral nerve radiofrequency ablation is contraindicated in patients with active implanted pulse generators such as pacemakers due to concerns for electromagnetic interference. Re-examination of this contraindication is warranted given CLBP and cardiac disease are often comorbid conditions, particularly given the increased prevalence of cardiac implanted electronic device (CIED) requirements in the aging population. Recent literature supports other applications of bipolar radiofrequency ablation in the CIED population. However, there are no published cases of this particular procedure being safely performed in a CIED patient, highlighting the novelty of this case.

Conclusions
This is the first published case demonstrating successful intraosseous basivertebral nerve radiofrequency ablation in a patient with a permanent pacemaker. With the utilization of bipolar radiofrequency that limits the energy within the vertebral body and the asynchronous mode setting for the pacemaker as per FDA contraindication, this case demonstrates the need for further investigation to whether this should be a contraindication in this CLBP population.