

Introduction

- Established treatment options for vasospastic angina
 - Long-acting nitroglycerins¹ and Calcium channel blockers²
 - Ranolazine- sodium channel inhibitor
 - Percutaneous revascularizations/surgical options for vasospastic angina are limited given absence of focal mechanical obstructive lesions.
- Spinal cord stimulation at the T1 to T2 level has been effective and more commonly used for management of refractory angina pectoris
- One other documented use of spinal cord stimulation for vasospastic angina in a 73 year old patient³.

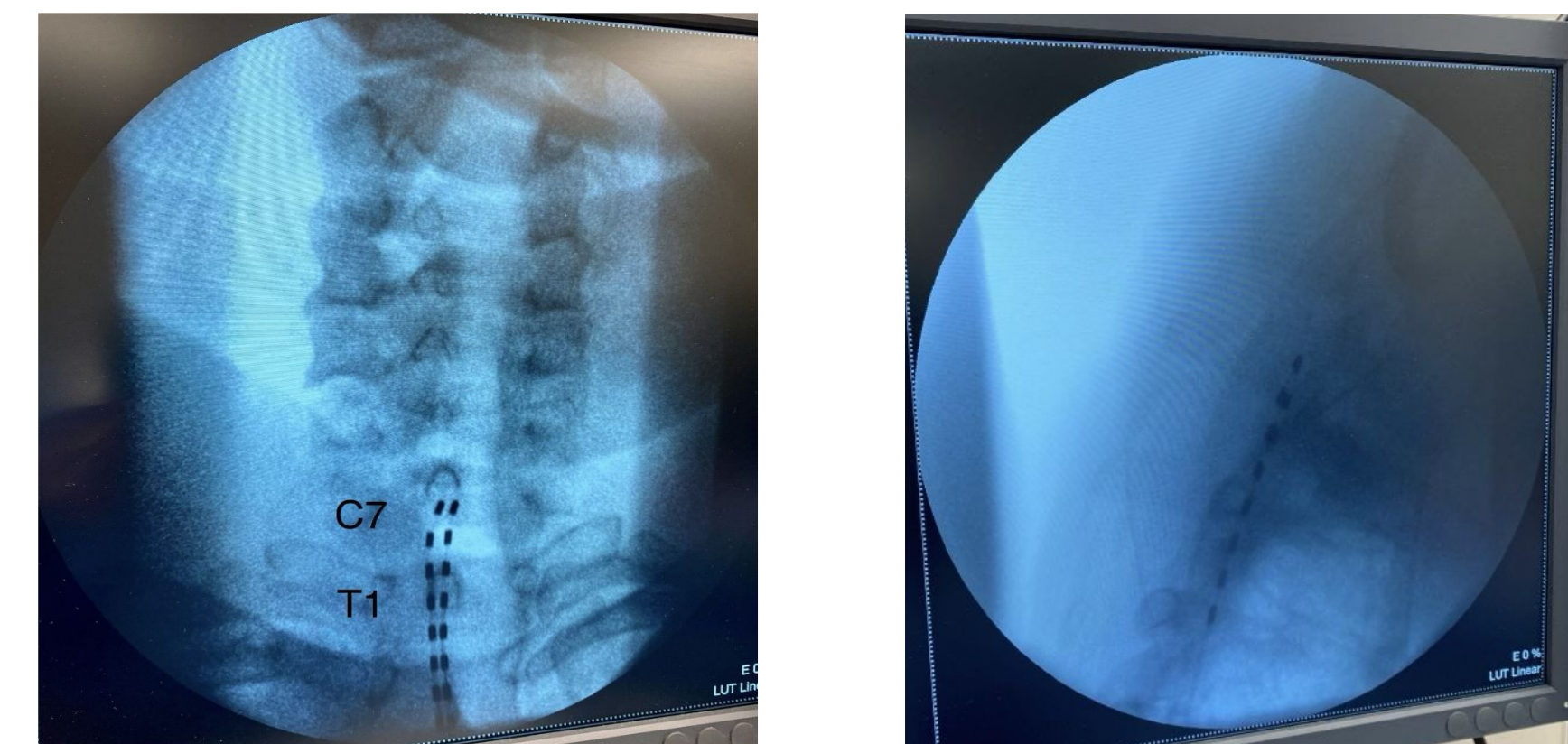
Patient: 46 year old Female

- Angina pectoris presenting for several months limiting her independence as well as activities of daily living.
- The patient sought treatment in Emergency Departments several times within the span of 6 months.
- The patient was evaluated by cardiology
 - Angiogram showed widely patent coronary arteries and exercise electrocardiogram was normal.
 - Angiogram and response of coronary vasoconstriction to intracoronary acetylcholine led to the diagnosis of **vasospastic angina without atherosclerotic coronary artery disease**.
- Failed Treatments
 - Enhanced External Counterpulsation (EECP) therapy for two months with benefit but not resolution of her symptoms.
 - Medication therapy: several opioids, NSAIDs, muscle relaxants, neuropathic medications, Low Dose Naltrexone, and a ketamine compound cream. Only Nitroglycerin 0.4MG, in combination with a calcium channel antagonist (Cardizem, Diltiazem), partially relieved her symptoms.

Neuromodulation Treatment

- Implantation of a spinal cord stimulator was proposed
- The patient saw 100% relief of symptoms after a five-day trial
- Baseline pain was a 9/10 prior to the trial and a 0/10 during the trial.
- Procedure:** Under fluoroscopy guidance, two eight contact Octrode spinal cord stimulator leads were placed using a 14-gauge Touhy needle to advance into the epidural space up to the T1-T2 level. The leads were tunneled to the generator located in a newly created lateral pocket where a Proclaim XR 5 IPG was placed.
- Patient was seen in follow up one week, two weeks, and three weeks post-implant without complications.
- Result**
 - 90% relief of her vasospastic angina after programming of the device settings
 - Complete resolution of symptoms during activities of daily living, improvement in walking short distances, and carrying objects.
 - Functional disability as measured with a Low Back Oswestry Disability Index was 72 prior to the implant and decreased to 56 after the implant.
 - The patient is currently two years post implant and continues to receive 90% relief.

Figure 1. SCS Implantation Fluoroscopic Images



Discussion

- This case demonstrates the successful use of neuromodulation for refractory vasospastic angina.
- In the previous use of spinal cord stimulation for ischemic angina pectoris, it has been effective in providing an antianginal effect without reduction of myocardial infarction warning symptoms⁴.
- Neuromodulation treats neuropathic angular pain by inducing paresthesia of the heart and chest region and suppressing the hyperexcitatory responses of spinothalamic tract cells thereby providing an analgesic effect⁵.**
- A randomized controlled trial would be required to confirm the efficacy of this treatment for vasospastic angina.

References

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