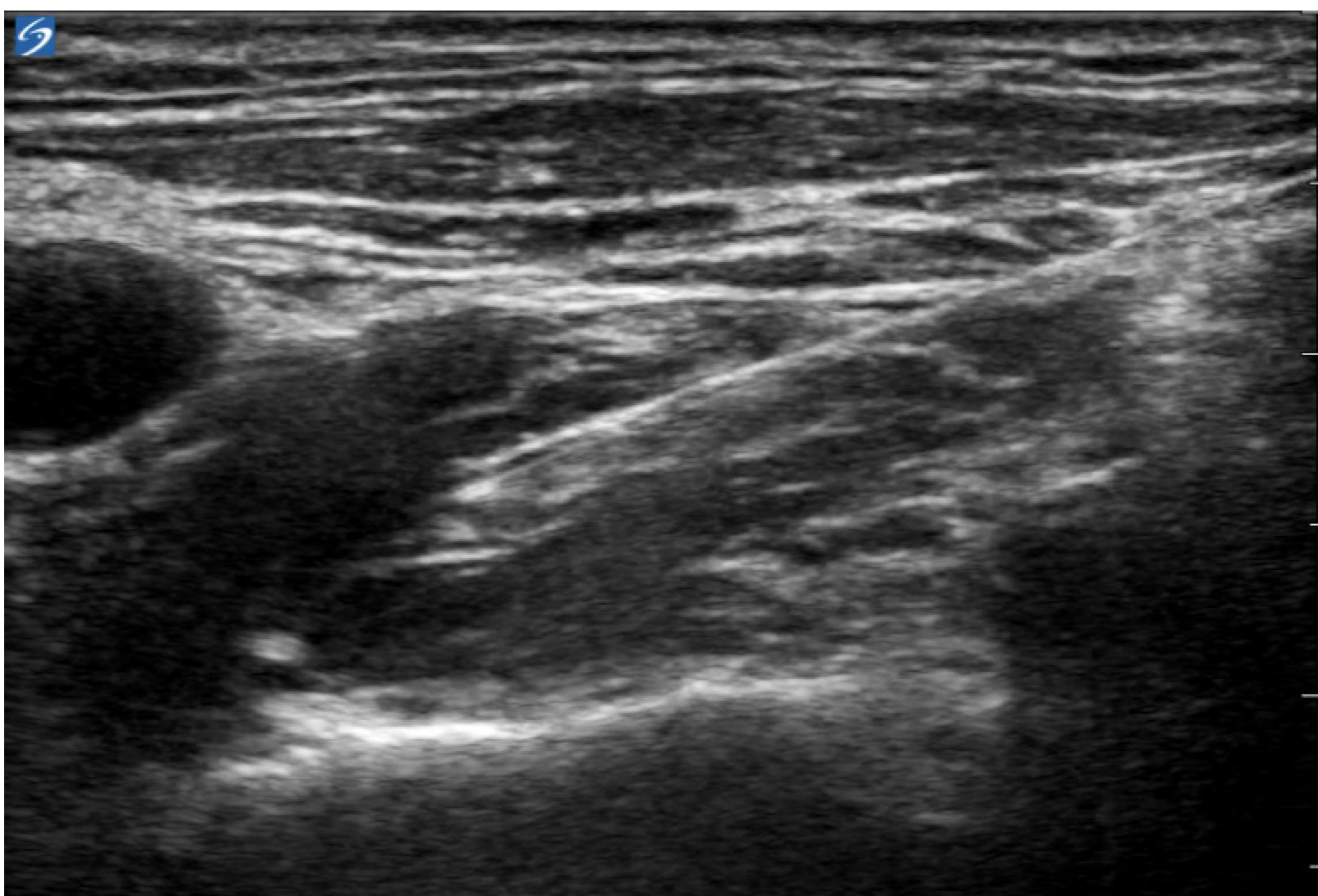
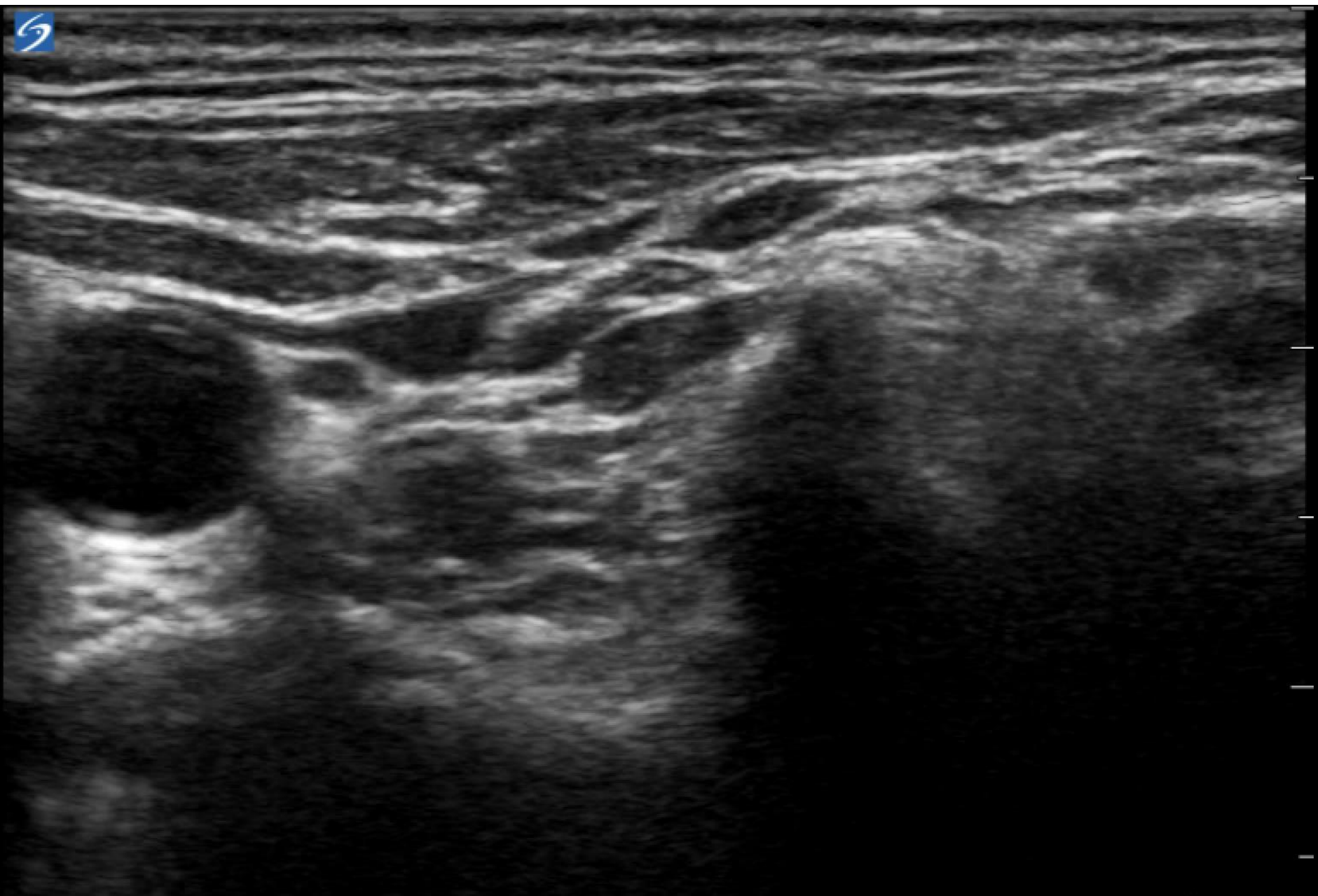


Stellate Ganglion Block for Prevention of VT Storm During Thyroidectomy: A Case Report

Aidan Hoie, MD; Michael Canepa, MD; Matthew Lyman, MD;
Kyle Marshall, MD; Jillian Vitter, MD
University of Colorado

Introduction

- The stellate ganglion is a collection of sympathetic nerves found anterior to the neck of the first rib.¹
- It provides sympathetic output to the myocardium, upper extremity, neck, and face.¹
- Blockade of the stellate ganglion was initially studied in the treatment of chronic pain syndromes such as chronic regional pain syndrome (CRPS).²
- Over time, stellate ganglion block (SGB) has evolved both in technique (landmark, fluoroscopy, ultrasound) and indication (CRPS, intractable angina, PTSD, arrhythmias).^{1,2,3}
- We report a patient with recurrent ventricular tachycardia (VT) storm who received a SGB prior to thyroidectomy.



Case Report

- A 62-year-old male with a past medical history of severe ischemic cardiomyopathy status post biventricular ICD implantation, atrial fibrillation on amiodarone, and recurrent VT presented to an outside hospital for ICD shocks and was found to be in VT storm.
- His labs were significant for an undetectable TSH and elevated free T4 and the etiology of the VT storm was thought to be amiodarone induced thyrotoxicosis.
- The patient was stabilized with plasmapheresis, lidocaine and propranolol infusions, propylthiouracil, and steroids and transferred to our institution for higher level of care.
- After coordination with endocrinology, ENT, cardiology and anesthesiology, the patient was scheduled for a thyroidectomy.
- While at the time of surgery the patient was no longer in VT storm, there was concern that manipulation of the thyroid during the procedure could induce VT therefore the acute pain service was consulted for a SGB.
- The block was performed in the OR prior to induction. A total of 2 mL 2% lidocaine and 8 mL 0.5% bupivacaine was injected between the prevertebral fascia and the longus colli muscle under ultrasound-guidance.
- The patient then underwent general anesthesia with no recurrence of VT storm during the case.
- He was transported to the ICU for close monitoring post procedure. He transitioned to floor status on postoperative day 4 and was discharged from the hospital on postoperative day 8.

Materials and Methods

- A literature review was performed investigating the use of SGB as a treatment for VT storm.
- The patient provided written consent to write this case report to the attending anesthesiologist and acute pain fellow.
- This case report does not contain any patient identifiable information; therefore, it is exempt from IRB review as per Colorado Multiple Institutional Review Board (COMIRB) policy.

Discussion

- Much of the literature concerning SGB for arrhythmia has focused on its utility in the setting of refractory electrical storm.
- The first prospective, multicenter observational study (STAR study) published in 2024 reported that SGB was both safe and effective in reducing the amount of treated arrhythmic events in patients with refractory electrical storm.⁴
- Our patient’s VT was well controlled at the time of surgery and we were initially consulted for a “rescue block” in the event the patient went into refractory VT during the case.
- However, given the patient would likely be unstable in this scenario and the surgical field was adjacent to the block site, we thought it would be best to proceed with the block preoperatively.
- While there is no way to tell if the patient’s perioperative course would have changed without the block, we believe the benefits outweighed the risks given the favorable safety profile of SGB in this high risk patient.

References

1. Narouze, S. Ultrasound-Guided Stellate Ganglion Block: Safety and Efficacy. *Curr Pain Headache Rep* **18**, 424 (2014). <https://doi.org/10.1007/s11916-014-0424-5>
2. Rae Olmsted KL, Bartoszek M, Mulvaney S, et al. Effect of Stellate Ganglion Block Treatment on Posttraumatic Stress Disorder Symptoms: A Randomized Clinical Trial. *JAMA Psychiatry*. 2020;77(2):130–138. doi:10.1001/jamapsychiatry.2019.3474
3. Meng, L, Tseng, C, Shivkumar, K. et al. Efficacy of Stellate Ganglion Blockade in Managing Electrical Storm: A Systematic Review. *J Am Coll Cardiol EP*. 2017 Sep, 3 (9) 942–949. <https://doi.org/10.1016/j.jacep.2017.06.006>
4. Savastano, S. et al. Electrical storm treatment by percutaneous stellate ganglion block: the STAR study, *European Heart Journal*, Volume 45, Issue 10, 7 March 2024, Pages 823-833, <https://doi.org/10.1093/eurheartj/ehae021>