# Stellate Ganglion Block for the Treatment of Refractory Ventricular Tachycardia Storm

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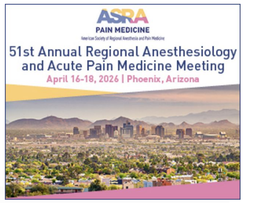


## Introduction

- Stellate ganglion blocks (SGB) have been shown to be useful as a minimally invasive treatment for a range of high-morbidity disease processes associated with increased sympathetic activation including PTSD and postherpetic neuralgia[1]
- SGB is an emerging treatment option for the suppression of ventricular tachycardia (VT) storm, a high-mortality rhythm characterized by ≥3 episodes of of ventricular arrhythmia within 24 hours[1,2]
- This poster highlights a case of SGB use for the treatment of unstable ventricular tachyarrhythmia refractory to conventional treatment options

## Case Report

- A 50-year-old male with a history of cardiomyopathy (EF 20%) complicated by VT with subsequent ICD placement and multiple prior VT ablations was admitted to the ICU with >10 ICD shocks at home; the patient was found to be in recurrent VT.
- He was treated with amiodarone, procainamide, and lidocaine infusions, underwent multiple VT ablations and anti-tachycardia pacing (ATP). Despite these interventions, he was unable to convert to sinus rhythm.
- The patient developed pulmonary edema and signs of end organ dysfunction; he then underwent intraaortic balloon pump (IABP) placement and multiple cardioversions without resolution of VT.
- After obtaining consent, our team performed a left-sided stellate ganglion block under ultrasound guidance with injection of 8cc of 0.125% bupivicaine.
- At the time the block was performed, the patient's heart rate was 141 bpm. Within 30 minutes of SGB, the patient's heart rate decreased to 95 bpm, allowing the ICU team to successfully initiate A-V sequential pacing
- The patient was then cannulated for extracorporeal membrane oxygenation (ECMO) as a bridge to transplant

## Technical Approach

- The ultrasound view was obtained by placing a linear probe at the C6 level (Figure 1)
- Needle was directed in-plane to the prevertebral fascia between the left carotid artery and the C6 anterior tubercle to target the sympathetic chain
- Laterality:
  - Evidence shows that the left SG likely innervates more of the left ventricular myocardium[3]
  - Unilateral SGB reduces risk of complications (ie bilateral recurrent laryngeal nerve involvement)

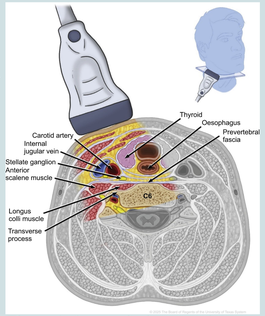


Figure 1. Anatomical approach

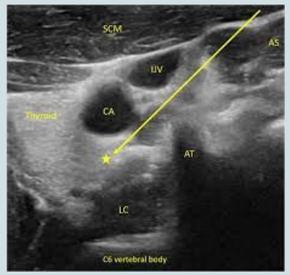


Figure 2. Ultrasound of stellate ganglion block anatomy with needle trajectory

## Figures

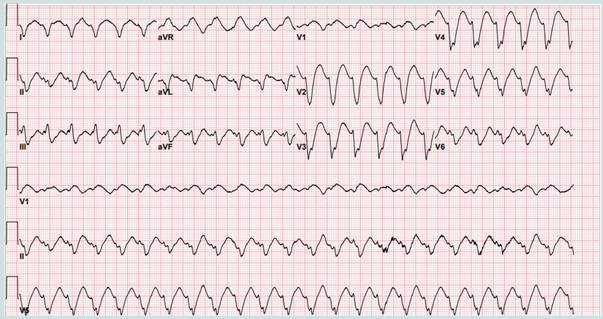


Figure 3. Pre-SGB EKG showing monomorphic ventricular tachycardia, HR 141 bpm

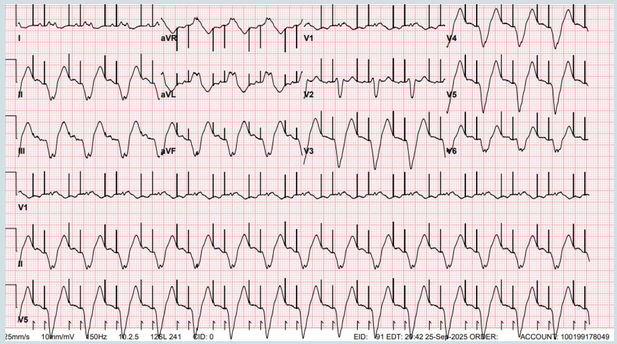


Figure 4. Post-SGB EKG showing successful A-V sequential pacing, HR 95 bpm

## Discussion

- In this case, the SGB was a successful temporizing measure in restoring hemodynamic stability
- SGB allowed the patient to undergo ECMO cannulation in a controlled operating room setting rather than emergently at the bedside
- This case highlights the utility of SGB for VT refractory to multiple treatment modalities, serving as a bridge to MCS initiation and ultimately transplantation

## Conclusions

- Recent studies have shown that SGB is associated with a consistent reduction of treatment-refractory VT/VF and associated shocks[4]
- In patients with refractory electrical storm, conventional treatments such as catheter ablation often have high rates of VT recurrence[5], and other treatments such as surgical sympathectomy or epidural anesthesia are often not feasible due to patient instability, coagulopathy, or need for anticoagulation
- SGB are safe with low complication rates[5] and can be done at the bedside, limiting resource consumption and risk of patient decompensation
- Further studies with larger population sizes are warranted to elucidate the utility of SGB earlier on in the treatment course

## References

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**Disclaimer**: Because this project lacked personalized patient information and did not affect clinical care, it was exempt from IRB review requirements under institutional policy.