PAIN MEDICINE CASE REPORTS

ISSN 2768-5152

Volume 10, Number 1, pp. 29-32

STELLATE GANGLION BLOCK FOR TREATING POST-COVID-19 POSTTRAUMATIC STRESS DISORDER

Alaa Abd-Elsayed, MD

Background: Posttraumatic stress disorder (PTSD) has emerged as a significant neuropsychiatric complication in the aftermath of COVID-19, particularly among individuals with severe illness. Conventional treatments often fall short for these patients, highlighting the need for novel therapeutic approaches. Stellate ganglion block (SGB), a sympathetic nerve block targeting the cervical sympathetic chain, has shown promise in alleviating PTSD symptoms by modulating autonomic dysregulation.

Case Report: We report the case of a man with treatment-resistant PTSD following a COVID-19 infection in 2020. After unsuccessful trials of therapy and pharmacologic interventions, the patient underwent a series of bilateral SGBs 2 weeks apart. The procedures were performed under fluoroscopic guidance using a local anesthetic and corticosteroid combination. At the 2-month follow-up, the patient reported marked improvement in mood, anxiety, and panic symptoms, indicating a sustained clinical benefit.

Conclusions: Our case supports the growing evidence for SGB as a potential treatment for post-COVID-19 PTSD, particularly in patients unresponsive to conventional therapies. While encouraging, this finding underscores the need for further research to establish efficacy, safety, and patient selection criteria in broader populations.

Key words: COVID-19, PTSD, posttraumatic stress disorder, stellate ganglion

BACKGROUND

The global impact of the COVID-19 pandemic has gone far beyond the initial infection period. More patients are now experiencing lingering symptoms, collectively called long COVID or postacute sequelae of SARS-CoV-2 infection (1). Furthermore, emerging public health data suggest that mask mandates and vaccination significantly influence COVID-19-related hospitalizations and deaths (2). This broader epidemiologic insight underscores the need for systemic preventive strategies and personalized interventions for long-term sequelae. Relevant literature also highlights the broader impact of COVID-19, including rare but serious cardiovascular complications following vaccination. A recent review by Nitz et al (3) identified events, such as myocarditis, pericarditis, and vaccine-induced thrombotic thrombocytopenia (VITT), with myocarditis and VITT being the most frequently reported. While these events remain uncommon, their acute nature and demographic patterns emphasize the need for early recognition and individualized care. In that light, stellate ganglion block (SGB) represents a bridge between population-level prevention and individualized recovery. Among these long-lasting issues, neuropsychiatric symptoms are some of the most severe, including anxiety, depression, cognitive difficulties, and posttraumatic stress disorder (PTSD). At the same time, the pandemic profoundly affected pain management practices. National recommendations to suspend elective procedures delayed access to care for chronic pain patients, increasing their disease

From: Department of Anesthesiology, University of Wisconsin, Madison, WI

Corresponding Author: Alaa Abd-Elsayed, MD, E-mail: alaaawny@hotmail.com
Disclaimer: There was no external funding in the preparation of this manuscript.
Conflict of interest: Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted manuscript.
Patient consent for publication: Consent obtained directly from patient(s).
This case report adheres to CARE Guidelines and the CARE Checklist has been provided to the journal editor.
Accepted: 2025-10-20, Published: 2026-02-28

burden, opioid use, and psychological stress. To mitigate these impacts, the American Society of Interventional Pain Physicians developed staged reentry guidelines for interventional pain services. Still, many patients suffered from worsened function and quality of life in the interim. This added complexity to patient care and may have contributed to the rising incidence of burnout among interventional pain physicians (4,13).

PTSD has been especially worrisome in survivors of severe COVID-19, particularly those who needed hospitalization or intensive care. These symptoms are often linked to the combination of physical distress, social isolation, and emotional trauma experienced during the illness (11).

Although conventional treatments for PTSD—such as selective serotonin reuptake inhibitors and cognitive behavioral therapy—remain the first line of management, many patients experience limited response or intolerable side effects. Innovative interventions are urgently needed for patients with refractory symptoms. SGB, a sympathetic nerve block at the cervical level, has shown promise in treating PTSD, primarily through its modulation of autonomic activity and influence on brain regions involved in emotional regulation (6).

In addition to its application in PTSD, SGB is being explored in the management of various long COVID symptoms. A recent case by Abd-Elsayed (5) demonstrated improved taste and smell function in patients with persistent anosmia and ageusia following COVID-19, suggesting that SGB may aid in reversing central autonomic dysregulation. More recently, SGB has also been used to treat persistent parosmia, a common and distressing symptom in long COVID patients, again showing rapid symptom resolution (8-9). Together, these findings suggest that SGB may offer therapeutic benefits across a wide range of post-COVID-19 neurological and psychiatric sequelae.

Additionally, patients recovering from COVID-19 frequently report chronic pain syndromes—including neuropathic pain, musculoskeletal discomfort, and widespread pain—requiring specialized management (10). These syndromes may be driven by neuroinflammation, immune dysregulation, and sympathetic overactivity, further supporting the role of targeted interventions like SGB in post-COVID-19 pain and mental health management.

In this report, we describe a case in which a patient with post-COVID-19 PTSD unresponsive to conventional therapy—experienced significant symptom relief following SGB.

CASE PRESENTATION

A 65-year-old man who has been seen in the pain clinic for chronic low back pain mentioned that he developed PTSD after he had a COVID-19 infection in 2020. The patient described severe fear and anxiety. The patient tried therapy and medications with no success. We discussed with the patient the use of SGB for treating his PTSD, and the patient agreed to undergo the procedure, given his severe need to overcome his condition.

The patient provided consent for presenting and submitting his case for publication.

Procedure

We planned on performing bilateral SGB on one side at a time, with 2 weeks in between. Both blocks were performed in the same way and using the same medications. The patient was supine with a pillow underneath the shoulders and upper back to create some neck extension. The site was then cleaned with chlorhexidine, and sterile drapes were placed. Under fluoroscopic guidance, a 25G needle was advanced until it was in contact with the C6 vertebra, then contrast was injected, confirming spread over C7-T1 vertebrae where the SG is located. Then, 0.25% bupivacaine with epinephrine (1 mL) was injected as a test dose to prevent intravascular spread. Then, after negative aspiration, 10 mg of Decadron was injected, followed by 9 mL of 0.25% bupivacaine. At the 2-month follow-up, the patient indicated improvement in mood, lack of fear, anxiety, and panic attacks he used to have frequently. The patient's family confirmed the same findings.

DISCUSSION

This case contributes to the growing body of literature supporting the use of SGB for post-COVID-19 neuropsychiatric conditions, including PTSD. The rapid and sustained symptom relief experienced by the patient highlights SGB's therapeutic potential, particularly in individuals who are refractory to traditional pharmacologic and psychotherapeutic interventions. The underlying mechanism likely involves sympathetic blockade and subsequent modulation of central pathways responsible for autonomic regulation and emotional processing, including the amygdala, insular cortex, and hypothalamus (11).

The autonomic nervous system has emerged as a central player in the pathophysiology of long COVID. Dysautonomia—manifesting as fatigue, orthostatic

intolerance, palpitations, and anxiety—is a commonly reported feature in these patients. SGB targets the cervical sympathetic chain, helping reset autonomic balance and reduce sympathetic overactivity. This theoretical mechanism is supported by recent studies (11,12) evaluating the efficacy of SGB in various long COVID symptom clusters.

The procedure's utility has also been demonstrated in treating post-COVID-19 chemosensory disorders. Abd-Elsayed (5) and Kalava et al (6) reported successful recovery of taste and smell in patients treated with SGB, suggesting that the sympathetic nervous system may influence central olfactory pathways or cerebral perfusion. In a separate study (9), patients with persistent parosmia following COVID-19 infection responded rapidly to SGB, experiencing resolution of distorted smell and improved quality of life. These findings reinforce that SGB may act peripherally and centrally to influence neuroinflammation and dysregulation (7-9).

SGB has become a promising option for treating PTSD, especially in patients who continue to experience symptoms despite standard treatments. A clinical trial by Rae Olmsted et al (11) evaluated SGB for PTSD and found it significantly reduced Clinician-Administered PTSD Scale symptom severity scores, in accordance with the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (American Psychiatric Association 2013), compared to a sham procedure. Although the study's short follow-up period and modest baseline symptoms limit how broadly these findings can be applied, the results indicate that SGB may be a valuable additional therapy, particularly for treatment-resistant cases (12).

The mechanism behind SGB's effect on PTSD involves modulating the autonomic nervous system. PTSD features hyperarousal and heightened sympathetic tone; SGB targets the SG to inhibit this overactivation. By reducing sympathetic output, SGB may rebalance autonomic function and lessen hypervigilance, insomnia, and irritability. Neuroimaging indicates SGB may also influence brain regions like the amygdala and insula involved in emotion regulation, suggesting a broader neuromodulatory effect. These findings support SGB as a targeted treatment for PTSD's physiological dysregulation (13).

Minimally invasive therapies like SGB may play a broader role not only in patient care but potentially in supporting provider mental health by addressing stress-related dysregulation. Given the high prevalence of burnout, routine evaluation and targeted strategies—including mental health support—should be incorporated into workforce sustainability plans (4,13).

This case further supports the hypothesis that post-COVID-19 PTSD may share a common pathophysiological thread with other long COVID symptoms, particularly involving sympathetic overactivity and maladaptive stress responses. The dramatic improvement following SGB highlights its potential to interrupt this cycle and restore neurophysiological balance. Although encouraging, these results must be interpreted cautiously given the single-patient design. Further prospective studies are needed to evaluate the durability of effect, the optimal timing of intervention, and predictors of response in larger cohorts (11,12).

Nevertheless, given its safety profile, rapid onset of action, and broad potential applicability, SGB should be considered as part of a comprehensive, multidisciplinary treatment approach for patients with post-COVID-19 PTSD and other autonomic or neuropsychiatric manifestations of long COVID.

CONCLUSIONS

This case report shows the efficacy of bilateral SGB in treating post-COVID-19 PTSD. Bigger studies are needed to prove the efficacy of the procedure and its consistency. Previous studies demonstrated the effectiveness of SGB in treating PTSD, but more work is required to prove efficacy specifically in post-COVID-19 PTSD.

REFERENCES

1. Chauhan G, Upadhyay A, Khanduja S, Emerick T. Stellate ganglion block for anosmia and dysgeusia due to long COVID. *Cureus* 2022; 14:e27779.
2. Abd-Elsayed A, D'Souza RS. The burden of coronavirus disease 2019-related cases, hospitalizations, and mortality based on vaccination status and mandated mask use: Statewide data from Wisconsin and narrative review of the literature. *Anesth Analg* 2022; 134:524-531.
3. Nitz JN, Ruprecht KK, Henjum LJ, et al. Cardiovascular sequelae of the COVID-19 vaccines. *Cureus* 2025; 17:e82041.
4. Shah S, Diwan S, Soin A, et al. Evidence-Based risk mitigation and stratification during COVID-19 for return to interventional pain practice: American Society of Interventional Pain Physicians (ASIPP) guidelines. *Pain Physician* 2020; 23(suppl 4):S161-S182.
5. Abd-Elsayed A. Stellate ganglion block for treating post-COVID impairment of taste and smell. *Pain Med Case Rep* 2024; 8:261-263.
6. Kalava A, Benyahia SA, Tico Calzada R, Staat CM. Efficacy of stellate ganglion block in treating long-term COVID-19-related olfactory and gustatory dysfunction: A case series. *Cureus* 2023; 15:e40929.
7. Ayoub L, Almarzouki AF, Al-Raddadi R, Bendary MA. Persistent post-COVID-19 olfactory dysfunction and its association with autonomic nervous system function: A case-control study. *Diseases* 2024; 13:4.
8. Fiala K, Martens J, Abd-Elsayed A. Post-COVID pain syndromes. Curr Pain Headache Rep 2022; 26:379-383.
9. Naimi BR, Garvey E, Chandna M, et al. Stellate ganglion block for treating post-COVID-19 parosmia. *Int Forum Allergy Rhinol* 2024; 14:1088-1096.
10. Fajardo Perez M, Yamak-Altinpulluk E, Diez Tafur R, et al. Novel ultrasound-guided supraclavicular stellate ganglion block. *Pain Pract* 2024; 24:808-814.
11. 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; 77:130-138. Erratum in: *JAMA Psychiatry* 2020; 77:218. Erratum in: *JAMA Psychiatry* 2020; 77:982.
12. Feigin G, Velasco Figueroa S, Englesakis MF, D'Souza R, Hoydonckx Y, Bhatia A. Stellate ganglion block for non-pain indications: A scoping review. *Pain Med* 2023; 24:775-781.
13. Abd-Elsayed A, Rupp A, D'Souza RS, et al. Interventional pain physician burnout during the COVID-19 pandemic: A survey from the American Society of Pain and Neuroscience. *Curr Pain Headache Rep* 2023; 27:259-267.