



CADTH Reference List

Stellate Ganglion Block for the Treatment of Posttraumatic Stress Disorder, Depression, and Anxiety: A 2023 Update

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Key Messages

- We did not find any relevant literature about the clinical effectiveness of stellate ganglion block for the treatment of posttraumatic stress disorder.
- We found 1 randomized controlled trial about the clinical effectiveness of stellate ganglion block for the treatment of depression or anxiety.
- We did not find any relevant evidence-based guidelines about the use of stellate ganglion block for the treatment of posttraumatic stress disorder, depression, or anxiety.

Research Questions

1. What is the clinical effectiveness of stellate ganglion block for the treatment of posttraumatic stress disorder?
2. What is the clinical effectiveness of stellate ganglion block for the treatment of depression or anxiety?
3. What are the evidence-based clinical practice guidelines regarding the use of stellate ganglion block for the treatment of posttraumatic stress disorder, depression, or anxiety?

Methods

Literature Search Methods

The literature search strategy used in this report is an update of 1 developed for a previous CADTH report with additional terms included. For the current report, an information specialist conducted a literature search on key resources including MEDLINE, PsycInfo, the Cochrane Database of Systematic Reviews, the International HTA Database, Canadian and major international health technology agencies, as well as a focused internet search. The search approach was customized to retrieve a limited set of results, balancing comprehensiveness with relevancy. The initial search was limited to English-language documents published between January 1, 2016, and January 21, 2021. For the current report, database searches were rerun on May 24, 2023, to capture any articles published or made available since January 1, 2016. The search of major health technology agencies was also updated to include documents published since January 2021.

Selection Criteria and Summary Methods

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in [Table 1](#). Full texts of study publications were not reviewed. The Overall Summary of Findings was based on information available in the abstracts of selected publications. Open access full-text versions of evidence-based guidelines were reviewed when available, and relevant recommendations were summarized.

Table 1: Selection Criteria

Criteria	Description
Population	Q1 and Q3: Individuals (any age) with PTSD Q2 and Q3: Individuals (any age) with depression (any type) or an anxiety disorder
Intervention	Stellate ganglion block (i.e., anesthetic [any kind] injection into the stellate ganglion)
Comparator	Q1: Standard or usual treatments for PTSD (e.g., pharmacological, psychological therapies), placebo, no treatment (safety outcomes only) Q2: Standard or usual treatments for depression and anxiety (e.g., pharmacological, psychological therapies), placebo, no treatment (safety outcomes only) Q3: Not applicable
Outcomes	Q1 and Q2: Clinical benefits and harms (e.g., remission of PTSD, PTSD symptoms, anxiety, depression, functional status, quality of life, hematoma, accidental injection of anesthetic into wrong space [e.g., intravascular, brachial plexus], allergic response, muscle spasm, infection) Q3: Recommendations regarding best practices (e.g., treatment protocols, who should be treated, counter indications for treatment)
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, nonrandomized studies, evidence-based guidelines

PTSD = posttraumatic stress disorder.

Results

One randomized controlled trial was identified regarding the clinical effectiveness of stellate ganglion block (SGB) for the treatment of depression or anxiety.¹ No relevant health technology assessments, systematic reviews, randomized controlled trials, or nonrandomized studies regarding the clinical effectiveness of SGB for the treatment of posttraumatic stress disorder were identified. Additionally, no relevant evidence-based guidelines regarding the use of SGB for the treatment of posttraumatic stress disorder, depression, or anxiety were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in [Appendix 1](#).

Overall Summary of Findings

One feasibility randomized controlled trial was identified regarding the clinical effectiveness of SGB for treatment-resistant depression.¹ The study found that individuals receiving bupivacaine injections at the stellate ganglion demonstrated a decrease in Montgomery-Asberg Depression Rating Scale scores after 42 days.¹ The same effect was observed in the control group.¹ Additionally, the adverse events observed in the same study were mild and temporary.¹

No relevant literature was found regarding the clinical effectiveness of SGB for the treatment of posttraumatic stress disorder and no relevant evidence-based guidelines regarding the use of SGB for the



treatment of posttraumatic stress disorder, depression, or anxiety were identified; therefore, no summary can be provided.



References

Health Technology Assessments

No literature identified.

Systematic Reviews

No literature identified.

Randomized Controlled Trials

1. Sussman D, Tassone VK, Nezhad FG, et al. Feasibility RCT of stellate ganglion block for treatment-resistant depression. *Chronic Stress (Thousand Oaks)*. Jan-Dec 2023;7:24705470231160315. [PubMed](#)

Nonrandomized Studies

No literature identified.

Guidelines and Recommendations

No literature identified.

Appendix 1: References of Potential Interest

Previous CADTH Reports

Li Y, Loshak H. CADTH health technology review: stellate ganglion block for the treatment of post-traumatic stress disorder, depression, and anxiety. *Can J Health Technol.* 2021;1(3). <https://www.cadth.ca/sites/default/files/pdf/htis/2021/RC1339%20SGB%20PTSD%20Final.pdf>. Accessed 2023 May 25.

Systematic Reviews

Unclear Comparator

Kerzner J, Liu H, Demchenko I, et al. Stellate ganglion block for psychiatric disorders: a systematic review of the clinical research landscape. *Chronic Stress (Thousand Oaks).* Jan-Dec 2021;5:24705470211055176. [PubMed](#)

Nonrandomized Studies

Case Studies or Reports

Kuo J, Nicklay M. Botox-enhanced stellate ganglion blockade for the treatment of post-traumatic stress disorder. *Cureus.* Apr 2023;15(4):e37573. [PubMed](#)

Lipov E, Sethi Z, Nandra G, Frueh C. Efficacy of combined subanesthetic ketamine infusion and cervical sympathetic blockade as a symptomatic treatment of PTSD/TBI in a special forces patient with a 1-year follow-up: a case report. *Heliyon.* Apr 2023;9(4):e14891. [PubMed](#)

Xu Y, Zhang Y. Treatment of multiple physiological and psychological disorders in one patient with stellate ganglion block: a case report. *J Int Med Res.* Jan 2021;49(1):300060520985645. [PubMed](#)
Not Specific to Stellate Ganglion Block

Lipov EG, Jacobs R, Springer S, Candido KD, Knezevic NN. Utility of cervical sympathetic block in treating post-traumatic stress disorder in multiple cohorts: a retrospective analysis. *Pain Physician.* 01 2022;25(1):77-85. [PubMed](#)

Peterson AL, Straud CL, Young-McCaughan S, et al. Combining a stellate ganglion block with prolonged exposure therapy for posttraumatic stress disorder: a nonrandomized clinical trial. *J Trauma Stress.* 12 2022;35(6):1801-1809. [PubMed](#)

Alternative Comparator

Mulvaney SW, Lynch JH, Curtis KE, Ibrahim TS. The successful use of left-sided stellate ganglion block in patients that fail to respond to right-sided stellate ganglion block for the treatment of post-traumatic stress disorder symptoms: a retrospective analysis of 205 patients. *Mil Med.* 07 01 2022;187(7-8):e826-e829. [PubMed](#)

Unclear Methods

Bajor LA, Balsara C, Osser DN. An evidence-based approach to psychopharmacology for posttraumatic stress disorder (PTSD) - 2022 update. *Psychiatry Res.* 11 2022;317():114840. [PubMed](#)

Review Articles

Kirkpatrick K, Khan MH, Deng Y, Shah KB. A review of stellate ganglion block as an adjunctive treatment modality. *Cureus.* Feb 2023;15(2):e35174. [PubMed](#)

Additional References

Evidence Repository

O'Neil ME, Cheney TP, Yu Y, et al. Pharmacologic and nonpharmacologic treatments for posttraumatic stress disorder: 2022 update of the PTSD-repository evidence base. Systematic review. Rockville (MD): Agency for Healthcare Research Quality; 2022. <https://effectivehealthcare.ahrq.gov/products/ptsd-pharm-non-pharm-treatment/research>. Accessed 2023 May 25.

Qualitative Study – Clinician Attitudes and Recommendations

Lynch JH, Muench PD, Okiishi JC, Means GE, Mulvaney SW. Behavioral health clinicians endorse stellate ganglion block as a valuable intervention in the treatment of trauma-related disorders. *J Investig Med.* 06 2021;69(5):989-993. [PubMed](#)