
Stellate Ganglion Block for Anxiety and Post-traumatic Stress Disorder

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Stellate Ganglion Block for Post-traumatic Stress Disorder (PTSD): Calm the body—Calm the mind

The stellate ganglion block (SGB) is a procedure in which an injection of a long-acting local anesthetic, using ultrasound guidance, is made in the side of the neck around the main nerve that controls the “fight or flight” response (the sympathetic nervous system). This nerve, (the cervical sympathetic chain) which is a two-way conduit, connects the parts of the brain that control the fight or flight response (referred to as the central autonomic network) to the rest of the body. By blocking or “turning off” the traffic in the cervical sympathetic chain, it is believed that the parts of the brain that control the fight or flight response are allowed to completely reset, resulting in long-term relief of the associated anxiety symptoms. Multiple peer-reviewed medical studies show that SGB results in significant long-term improvement in chronic anxiety symptoms associated with post-traumatic stress disorder. The SGB takes less than 15 minutes to perform, and benefits are seen in as little as 30 minutes.

The Military Roots of Stellate Ganglion Block’s Successes: Born out of US Special Operations

As with many other areas in medicine, military physicians and scientists have paved the way from theory to practice in this area as well. The world’s leading SGB experts are former U.S. Army physicians and combat veterans. How, and why, did this come about? Over two decades of continuous combat operations, primarily in Afghanistan and Iraq, our servicemembers and families endured multiple combat deployments with rapid turnaround between deployments in many cases lacking adequate recovery time and resources. For roughly 20% of veterans this resulted in a gradual onset of post-traumatic stress symptoms which presented with a variety of symptoms such as being emotionally cut-off from families and friends, poor sleep, anger, and irritability.

Many combat veterans simply would not ask for help for fear of being pulled off the line. Standard therapies such as daily medications (with associated side effects) or talk therapy with a “stranger” were not desirable options for many. Innovative clinicians sought other options. Stellate ganglion block had anecdotal evidence of providing relief of PTSD symptoms, so it was investigated as a potential novel treatment option for active-duty soldiers and sailors in several units on the East coast. Following early successes, stellate ganglion block was added to augment traditional psychotherapy among some of our nation’s most elite warriors—dramatically assisting struggling

teammates to remain highly functioning Rangers, Green Berets, and SEALs after a safe and simple shot in the neck. This was between 2010 and 2012. Word spread.

Although it has over 14 years of support in the medical literature, using SGB for PTSD is a relatively new indication for a procedure which has been performed since the 1920s (Lebovits et al., [1990](#); Lipov et al., [2022](#); Lynch et al., [2021](#), [2023](#); Mulvaney et al., [2014](#), [2015a](#), [2015b](#), [2020](#), [2021](#); Rae Olmsted et al., [2020](#)). Due primarily to successful use in the U.S. military, SGB has grown in popularity both inside and outside of military medicine. Recent research has demonstrated stellate ganglion block also to provide clinically significant improvement in anxiety symptoms as well as symptoms of traumatic brain injury (TBI; Mulvaney et al., [2024](#)). The research around SGB in brain health is an evolving area, which has been led primarily by current and former military physicians and therapists.

Treatment for PTSD

Post-traumatic Stress Disorder is a familiar topic to many clinicians who care for veterans, but this innovative PTSD treatment called Stellate Ganglion Block may be new to some. PTSD prevalence for servicemembers who returned from deployments in Iraq and Afghanistan has been estimated to be between 11% to 22%. PTSD is a psychiatric disorder that may occur in people who have experienced or witnessed a traumatic event such as a serious accident, a terrorist act, combat, or rape or who have been threatened with death, sexual violence or serious injury. For many veterans, PTSD may result from sexual trauma, combat, or a combination of these or other traumatic events such as domestic violence. Symptoms may become apparent years after a traumatic event and may manifest as: irritability, angry outbursts, problems concentrating or sleeping, avoiding activities and situations that may trigger distressing memories and difficulty experiencing positive emotions. Many servicemembers/veterans may not present with classic reexperiencing symptoms such as nightmares or flashbacks.

A comprehensive summary of PTSD treatment may be found elsewhere and is outside the scope of this article. Despite exhaustive research and clinical practice guidelines, there is agreement among many who treat PTSD that many existing therapies are inadequate for a substantial number of their clients or patients. A recent meta-analysis recommended that PTSD psychotherapies should be limited to cognitive processing therapy (CPT), eye movement desensitization and reprocessing (EMDR), cognitive therapy (CT), and narrative exposure therapy (NET;

Yunitri et al., 2023). High treatment dropout rates have brought into question the effectiveness of trauma-focused PTSD treatments among military populations. Drop out rates average roughly 25% across treatment types (Edwards-Stewart et al., 2021). Medications like SSRIs (e.g., sertraline, paroxetine) have been shown to reduce PTSD symptoms and are most effective when combined with therapy. However, medications alone may have limited long-term benefits and demonstrate dropout rates ranging from 30-50%. This is often due to side effects, perceived ineffectiveness, reluctance to take daily pills, or difficulty in adjusting to long-term medication use (Watts et al., 2013).

Too Good to be True? Evidence Supporting SGB for PTSD

After performing detailed counseling for the procedure, the stellate ganglion block procedure takes less than 15 minutes to perform and is not painful. SGB is not a fad; it has been well studied and validated. Since 1990, there have been over 25 original studies published in the peer-reviewed medical literature documenting SGB's safety and effectiveness in treating PTSD symptoms. Research has shown consistently that SGB can reduce PTSD symptoms by 50% and is particularly helpful in improving symptoms of irritability, surges of anger, difficulty concentrating, and trouble falling or staying asleep. In November 2019, a large multicenter, randomized clinical trial was published in *JAMA Psychiatry* demonstrating twice the effect of SGB over a placebo procedure. This study was conducted at three military hospitals—Womack Army Medical Center at Fort Bragg/Liberty, NC; Tripler Army Medical Center in Hawaii; and Landstuhl Regional Medical Center in Germany.

What do Therapists Say?

In a study conducted by Lynch et al in 2021, SGB was rated at least as useful as the most valuable interventions listed in the American Psychological Association Clinical Practice Guideline for the Treatment of Post-traumatic Stress Disorder. 100% of respondents characterizing SGB as 'Very Beneficial' or 'Somewhat Beneficial', and 0 respondents characterizing SGB as 'Not Helpful' or 'Harmful'. Of surveyed behavioral health clinicians with personal experience incorporating SGB into their trauma-focused psychotherapy, 95% of respondents would recommend SGB to a colleague as a useful tool for the treatment of trauma-related disorders. Given the findings from this study, it was recommended that behavioral health providers should consider using SGB in conjunction with standard trauma-focused care (Lynch et al., 2021).

Conclusion: SGB works

Advances in neurobiological models of PTSD have allowed us to deploy more effective treatments for addressing PTSD (Lynch, 2020). New insights about the role of the cervical sympathetic chain now allow us to directly

address some of the most debilitating symptoms experienced in post-traumatic stress. By administering an ultrasound-guided injection of local anesthetic, a successful stellate ganglion block procedure precisely targets elevated sympathetic tone and resets the body's sympathetic response system. SGB is an invaluable adjunct to trauma-focused therapy with a success rate of approximately 80%. The effects of a successful block are immediate and can last from six months to many years when paired with effective psychological interventions. Stellate ganglion blocks help calm the body and calm the mind, thereby allowing those suffering from the effects of trauma to more effectively participate in their therapy.

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A veteran of 31 years of service, Dr. Jim Lynch is board certified in Family Medicine and Sports Medicine and has extensive experience treating those suffering from the effects of trauma. A retired colonel and veteran of combat deployments to Panama, the First Gulf War, Iraq, Afghanistan, Syria, and several locations in Africa, Dr. Lynch has been a pioneer in the world of PTSD treatment using stellate ganglion block. He has published multiple articles in the medical literature on SGB, presented his research in international forums in Germany, the Netherlands, Australia, and Portugal, and has served as a staunch advocate for improving PTSD treatment options. Dr. Lynch provides expert SGB treatment at his clinic in Gambrills, Maryland.

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- Full text articles of supporting literature are available at: <https://drjameslynch.com/evidence/>
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