



# Stellate Ganglion Block: A Pediatric Case of Complex Regional Pain Syndrome

Artee Gandhi, MD \*

Medical Director Pain Management, Department of Anesthesiology, Cook Children's, Fort Worth, TX



## ABSTRACT

### Keywords:

Complex regional pain syndrome  
Neuropathic pain  
Pediatric imaging procedures  
Radiology nursing

Complex regional pain syndrome (CRPS) affects both children and adults. The pathophysiology may be complicated. This article outlines the criteria for CRPS and the treatment available. It includes a case discussion on the use of an interventional fluoroscopic procedure for medically refractory CRPS. This is performed to facilitate physical therapy and return of normal function.

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## Introduction

Complex regional pain syndrome (CRPS) is a chronic pain condition that affects children as young as 3 years old and adults. It was once referred to as reflex sympathetic dystrophy. The incidence of CRPS is unknown but estimated to be 1.58/100,000 persons younger than 20 years (Borucki & Greco, 2010). It is most common in adolescent females. This condition generally occurs after a minor trauma, but its pathophysiology is complex involving changes in the sympathetic, somatosensory, and motor nervous systems (Borucki & Greco, 2010). CRPS is divided into two types: type I is preceded by a minor trauma or fracture, without any significant nerve injury; type II is induced by partial injury of a nerve or one of its major branches. The Budapest criteria have been validated in the adult population but may be used to guide diagnosis in pediatric patients. The criteria are shown in Figure 1.

In sympathetically maintained CRPS, patients may present with allodynia, color and temperature changes, sweating, and burning pain that can lead to significant functional disability and dystonia. With lack of function, muscle atrophy and contractures may ensue (Weissmann & Uziel, 2016). Treatment for this condition must be initiated quickly to facilitate physical therapy (PT) and rehabilitation.

CRPS can affect upper or lower extremities or both. It can migrate from one side of the body to the other and vary in intensity on a daily basis. Stressors (e.g., a cool breeze or light touch) can

increase pain. CRPS can be disabling both from a physical standpoint and from a psychological perspective.

## Stellate ganglion block as treatment for upper extremity CRPS

A stellate ganglion block is one aspect of treatment that may provide the necessary relief for patients with upper extremity CRPS. The stellate ganglion is a collection of nerves formed by the fusion

1. Continuing pain, which is *disproportionate* to any inciting event.
2. Must report at least one symptom in *three of the four* following categories:
  - \_\_\_ Sensory: Reports of hyperesthesia and/or allodynia.
  - \_\_\_ Vasomotor: Reports of temperature asymmetry and/or skin color changes and/or skin color asymmetry.
  - \_\_\_ Sudomotor/Edema: Reports of edema and/or sweating changes and/or sweating asymmetry.
  - \_\_\_ Motor/Trophic: Reports of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin).
3. Must display at least one sign at time of evaluation in *two or more* of the following categories:
  - \_\_\_ Sensory: Evidence of hyperalgesia (to pinprick) and/or allodynia (to light touch and/or temperature sensation and/or deep somatic pressure and/or joint movement).
  - \_\_\_ Vasomotor: Evidence of temperature asymmetry (>1 degree Celsius) and/or skin color changes and/or asymmetry.
  - \_\_\_ Sudomotor/Edema: Evidence of edema and/or sweating changes and/or sweating asymmetry.
  - \_\_\_ Motor/Trophic: Evidence of decreased range of motion and/or motor dysfunction (weakness, tremor, dystonia) and/or trophic changes (hair, nail, skin).
4. There is no other diagnosis that better explains the signs and symptoms.

\* Corresponding author: Artee Gandhi, Department of Anesthesiology, Cook Children's, 1500 Cooper Street, Fort Worth, TX 76104.

E-mail address: [artee.gandhi@cookchildrens.org](mailto:artee.gandhi@cookchildrens.org).



### Pain Management

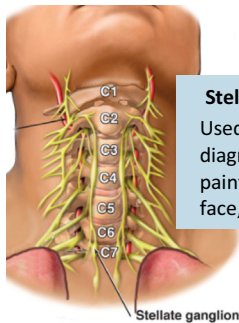
682-885-7246

1500 Cooper Street  
Fort Worth, Texas 76104

### Stellate Ganglion

#### Group of nerves in neck, next to the spine.

- Part of larger system of nerves called “autonomic nervous system”.
- These nerves help control the size of blood vessels that flow to the arms, head, and neck.
- These nerves may also send pain signals from the head, neck, or arms.



**Stellate Ganglion Block**  
Used for treating and diagnosing a number of painful conditions in the face, neck, and arms.

### How the block helps

- Injection blocks messages sent by the nerves.
- If these nerves are sending the pain signals, the pain will be reduced after the injection.

### We call you several days before the procedure

#### We will tell you:

1. Where and when to arrive.
2. When to stop drinking and eating.

#### Medicines and Allergies:

1. We will ask for the name and dose of all medicines your child takes.
2. We will ask if your child has allergies.

**Note:** You may need to stop taking some of your medicines before the procedure.

## Stellate Ganglion Block

### How we give the block

Takes approximately 15 to 20 minutes

1. We start an IV and give medicine to relax.
2. You lie on your back on the x-ray table.
3. We clean the skin on your neck to help decrease chance of infection.
4. Doctor injects small area with numbing medicine.
5. Imaging guides your doctor during the injection.

### Please know:

#### You should *not* have this procedure if you:

1. Have allergies to any x-ray dye, seafood, Lasix, or any of the medicines we may inject.
2. Are on a blood thinning medicine such as Coumadin, heparin, or Lovenox.
3. Have an active infection.
4. Have a temperature over 101 degrees..
5. Have a low platelet count.

### Risks

Generally speaking, this procedure is safe.

However, like any procedure there are risks, side effects, and the possibility of complications.

#### Risks may include but are not limited to:

- Bruising
- Infections
- Tenderness
- Headache
- Nerve damage
- Bleeding at the injection site
- Temporary weakness
- Very rarely pneumothorax, stroke, seizure, loss of consciousness

These instructions are only general guidelines. Your doctors may give you special instructions. If you have any questions or concerns, please call your doctor.

Figure 2. Patient Education Information Sheet for Stellate Ganglion Block. Reprinted with permission.

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