

Trans-nasal sphenopalatine ganglion block for the treatment of low back pain

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Introduction

The sphenopalatine (pterygopalatine) ganglion is a collection of neurons located within the pterygopalatine fossa posterior to the middle turbinate.¹ Branches of the sphenopalatine ganglion (SPG) carry parasympathetic, sympathetic and sensory fibers. Parasympathetic activity of the SPG is mediated by the greater superficial petrosal nerve, a branch of the facial nerve.¹ Sympathetic fibers synapse at the superior cervical ganglion, travel through the internal carotid plexus to join the greater petrosal nerve.² Because of this vast network, both sympathetic and parasympathetic as well as somatic and sensory fibers can be affected when performing a sphenopalatine ganglion block.² It is theorized that SPG blocks can interfere with the parasympathetic outflow from the SPG and that is considered the main mechanism of pain relief.¹ The SPG blocks have gained some notary in the treatment of trigeminal neuralgia, persistent idiopathic facial pain, migraine and cluster headaches.³ However, the connection to superior cervical ganglion may also have some benefit in the treatment of chronic pain syndromes such as low back pain or fibromyalgia.²

Objective

- Discuss the potential role sphenopalatine ganglion block plays in alleviating back pain

Case Presentation

This is a case of 50-year-old male with a 5-year history of low back pain secondary to herniated disk at L3- L5. Patient also complains of radiculopathy in the right buttock, leg and great toe. There were no inciting events. He rates his pain as an 7/10 on the pain scale and reports that pain is worsened by prolonged sitting and bending forward; pain is relieved with extension. He denies any loss of bowel or bladder function. Past medical history includes hypertension. Patient presents to the office because of pain refractory to physical therapy, nonopioid and opioid drug therapy, and epidural steroid injections.

Physical exam findings included positive straight leg raise at 30 degrees with pain radiating to the right buttock and posterior thigh. There were no motor or sensory deficits bilaterally. Deep tendon reflexes were 2+ bilaterally and symmetrical. Tissue texture changes and multiple trigger points were noted along paraspinal musculature. Osteopathic findings included L3-L5 neutral, rotated right, side bent left. Static and dynamic findings of sacrum included: right sulcus deeper, left inferior lateral angle, positive seated flexion test on the right and negative lumbosacral spring test indicating a forward sacral torsion. An MRI of the lumbar spine revealed a right herniated nucleus pulposus at L3-L5. Patient underwent sphenopalatine ganglion block and pain level was reassessed. After treatment, the patient reported a 2/10 on the pain scale, which is greater than a 50% pain reduction. In a subsequent visit, patient reported that his pain relief lasted for 5 days. During this visit, patient initially reported a 6/10 before treatment and 2/10 post-treatment.

Treatment Technique

- Prior to treatment, patient was screened for allergies to local anesthetics and previous history of seizures .
- Patient was placed in a supine position with cervical spine extended on the examination table.
- Four cotton-tipped applicators were submerged in Marcaine 0.5 %.
- Two cotton-tipped applicators (soaked with anesthetic) were advanced along the superior border of the middle turbinate and inferior turbinate of the nostril until resistance was met.
- The last two applicators were placed in the same manner into the contralateral nostril.
- The applicators were left in place for 45 minutes while the patient was resting on the examination table.
- Pain level was reassessed.

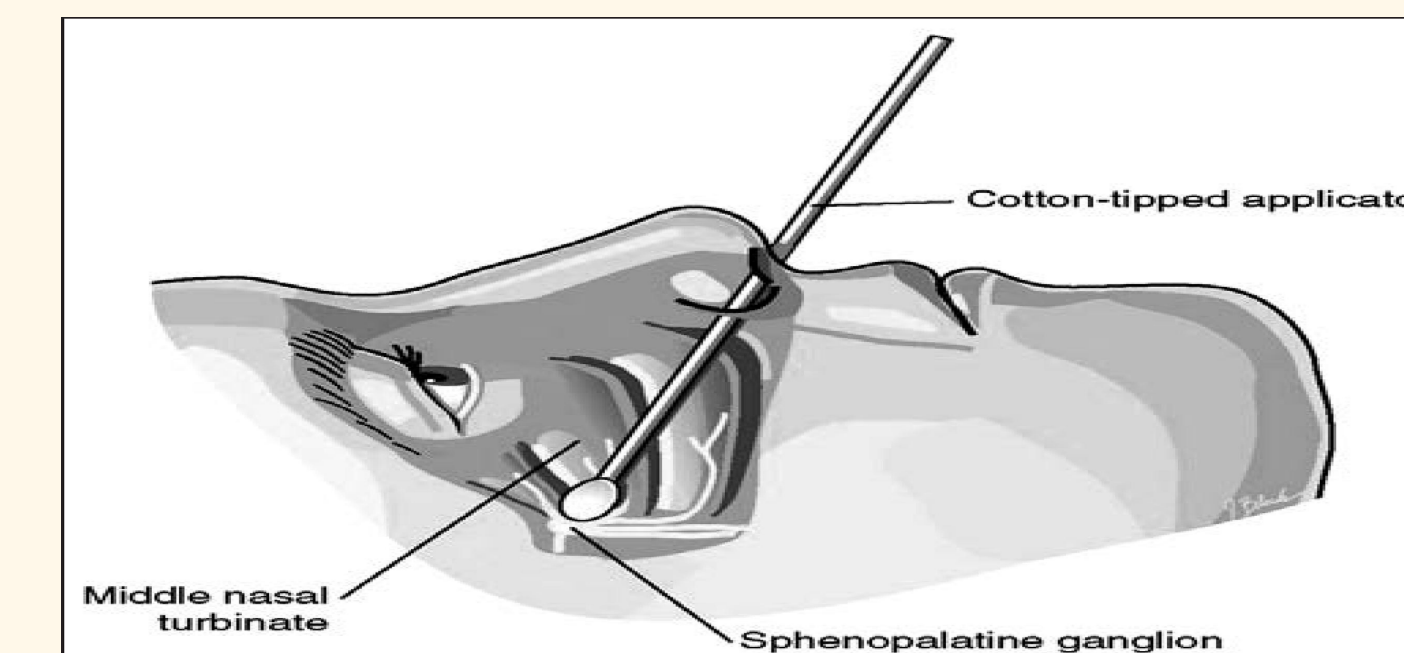


Figure 1 Sphenopalatine ganglion block [Image]. Machado FC, Carone Neto G, Ashmawi HA. Sphenopalatine ganglion block for post-dural puncture headache after invasive cerebrospinal fluid pressure monitoring. Case report. BrJP. https://www.scielo.br/scielo.php?script=sci_arttext&pid=S2595-31922019000400392. Accessed May 13, 2021.

Discussion

The sphenopalatine ganglion is an entry point to the autonomic system and can be modulated by anesthetizing the ganglion.² Based on previous studies involving changes in cutaneous pain threshold after sympathetic blocks in reflex dystrophy, it be concluded that increased sympathetic activity can cause various trigger points.³ With blockage of sympathetic ganglion, there was a decrease in trigger point pain. ² Herniated discs is also a condition that can be associated with the development of trigger points. As in the case of this patient, inhibition of the sympathetic trunk may have been established with the use of the sphenopalatine ganglion block. The decrease in sympathetic activity may have led to a decrease in pain manifested through trigger points or muscle spasms. Other studies have reasoned that sphenopalatine ganglion block alleviates the psychosomatic aspects of pain; however, autonomic innervations also mediate psychosomatic symptoms.²

Although long lasting relief was not evident in this patient, there was an overall decrease in intensity of low back pain. The therapeutic use of sphenopalatine ganglion block in low back pain should be further investigated as a noninvasive treatment option. The sphenopalatine ganglion may be a promising target for treatment of various pain syndromes aside from migraine treatment including low back pain.

References

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2. Berger, Jerry J. MD; Pyles, Stephen T. MD; Saga-Rumley, Segundina A. MD Does Topical Anesthesia of the Sphenopalatine Ganglion with Cocaine or Lidocaine Relieve Low Back Pain?, Anesthesia & Analgesia: June 1986 - Volume 65 - Issue 6 - p 700-702
3. Figure 1 Sphenopalatine ganglion block [Image]. Machado FC, Carone Neto G, Ashmawi HA. Sphenopalatine ganglion block for post-dural puncture headache after invasive cerebrospinal fluid pressure monitoring. Case report. BrJP. https://www.scielo.br/scielo.php?script=sci_arttext&pid=S2595-31922019000400392. Accessed May 15, 2021.