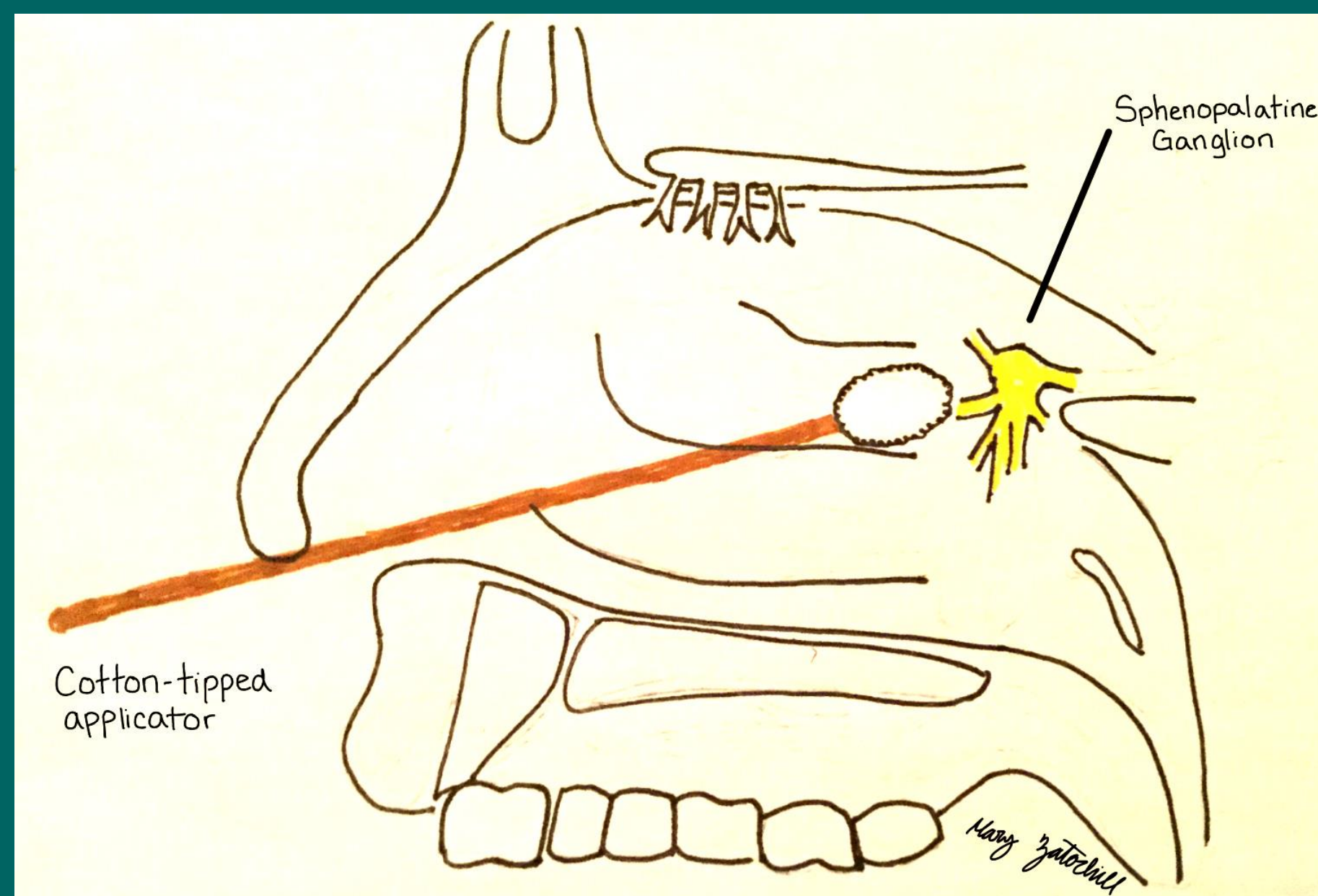


# Transnasal Sphenopalatine Ganglion Block as an Alternative Treatment for Post-dural Puncture Headache in an Adolescent

Mary Zatochill MD, Tim Petersen PhD, Ricardo Falcon MD, Codruta Soneru MD

## Introduction

- Sphenopalatine ganglion (SPG) block has been known as a therapy for acute and chronic facial/head pain for over 100 years.
- The sphenopalatine ganglion lies superficially in the pterygopalatine fossa, covered by only a thin layer of tissue, making it an ideal target for topical drug application.



- Post-dural puncture headache (PDPH) occurs due to loss of cerebrospinal fluid following a dural puncture.
- Symptoms are most classically positional, and related to nerve traction from downward displacement of the cranial contents as well as to the compensatory parasympathetic mediated intracranial venodilation that restores the intracranial volume.
- The SPG has sympathetic, parasympathetic, and sensory innervation overlapping in a minute area. This could be why the block mitigates the conduction of pain due to several etiologies, including PDPH.

- Although an epidural blood patch (EBP) typically has been considered the gold standard treatment of PDPH, there have been small case series in the adult literature suggesting similar efficacy comparing SPG block to an EBP for PDPH.

## Case Presentation

- A 12-year-old, 45-kg boy with ALL came to the attention of the Pediatric Acute Pain Service for PDPH after a diagnostic and therapeutic lumbar puncture (LP) had been performed in the outpatient pediatric oncology infusion center with a 22-gauge Quincke needle.
- An uneventful autologous EBP had been placed 2 days prior, however the boy reported a recurrence of symptoms after about 5 hours.
- After assessment of the patient and discussion of the adult literature regarding SPG block, it was decided to attempt a transnasal sphenopalatine ganglion block instead of repeat EBP.
- The block was performed in the operating room, under sedation maintained with dexmedetomidine and a native airway with spontaneous ventilation.
- Both nasal passages were topicalized with 2% lidocaine gel.
- Cotton-tipped applicators were prepared and soaked in 4% lidocaine.
- An applicator stick was inserted parallel to the floor of each nasal cavity until resistance was met at the posterior wall of the nasopharynx.
- Boluses of propofol (10-20mg) were given during insertion to allow the patient to tolerate the procedure without significant movement.

## Case Presentation



Strings were attached to the applicator sticks to facilitate removal from the nasal passages

- Additional 4% lidocaine was dripped down the shafts of the applicator sticks.
- The sticks were left in place for 40 minutes, then removed.
- There was no trauma to the nasal passages.
- Upon discontinuation of sedation, the patient reported complete resolution of his headache symptoms.
- No peri-procedural analgesics were administered.
- The patient continued to report no headache symptoms throughout follow-up five days later.
- While following up with the patient and his mother, she specifically requested that this technique be shared with other physicians.
- The boy continues his treatment for ALL. His oncologists agree that future LPs will be done with a Whitacre needle.

## Discussion

- While epidural blood patch is the gold standard for treatment of post-dural puncture headache, it is an invasive procedure.
- Side effects of epidural blood patch include:
  - Possible repeat dural puncture
  - Infection
  - Neurologic complications
  - Neuraxial seeding of malignancy
- Sphenopalatine ganglion block has shown promise in the adult and obstetric populations as a minimally invasive procedure to treat PDPH.
- With further research, sphenopalatine ganglion block may be appropriate for routine treatment of post-dural puncture headache in pediatric patients as well.

## References

1. Gaiser R. Postdural Puncture Headache: An Evidence-Based Approach. *Anesthesiology clinics* 2017; 35(1): 157-167
2. Sakr A, Rah K, Cohen S, et al. Can we offer sphenopalatine ganglion block for our obstetric patients following accidental dural puncture? Paper presented at American Society of Regional Anesthesia and Pain Medicine 12th Annual Pain Medicine Meeting, November 21–24, 2013
3. Nair, A. S., & Rayani, B. K. Sphenopalatine ganglion block for relieving postdural puncture headache: technique and mechanism of action of block with a narrative review of efficacy. *The Korean Journal of Pain* 2017; 30(2): 93–97.
4. Sluder G. The anatomical and clinical relations of the sphenopalatine ganglion block to the nose. *New York State Journal of Medicine* 1909; 90: 293–8

## Note

Written parental consent was obtained for publication of this case report.