

CASE REPORT

Transnasal Sphenopalatine Ganglion Block as Management Pain for PDPH (Post Dural Puncture Headache)

Diena Ashlihati^{✉*}, Mahmud^{**}, Juni Kurniawaty^{**}, Sudadi^{**}

Article Info :

Submitted :

01-09-2023

Accepted :

20-10-2025

Published :

31-10-2025

<https://doi.org/10.20961/sojaV5i2.78449>

Authors' affiliations:

*Resident Physician in
Department of
Anesthesiology and
Intensive Therapy, Faculty
of Medicine, Public Health
and Nursing, Gadjah Mada
University/Dr. Sardjito
Hospital, Indonesia

**Department of
Anesthesiology and
Intensive Therapy, Faculty
of Medicine, Public Health
and Nursing, Gadjah Mada
University/Dr. Sardjito
Hospital, Indonesia

✉Correspondence:

dieashzz@gmail.com

ABSTRACT

Background : Post dural puncture headache (PDPH) is a complication of the neuroaxial block anesthesia technique that cause leakage of cerebrospinal fluid (CSF) from a dural defect and intracranial hypotension. Typical symptoms, PDPH is bilateral, frontal, retroorbital or occipital headaches and extends into the neck constanly or slowly, and associated with photophobia and nausea. Management treatment of PDPH starting from conventional therapy (non-pharmacological and pharmacological) and invasive therapy including transnasal sphenopalatine ganglion block and as a gold standar is epidural blood patch that more invasive. Transnasal sphenopalatine ganglion block is a minimally invasive procedure on sphenopalatine ganglion which is an extracranial parasympathetic ganglion at fossa pterygopalatine. Various research state that efficacy of sphenopalatine ganglion block better than epidural blood patch.

Case Illustration : Reported a female, 37 years old came with headache extend to neck dan was diagnosed with PDPH post caesarean section with subarachnoid block anesthesia. Conservative therapy has been done but there is no improvement. As the next step, the patient transnasal sphenopalatine ganglion block using lidocaine 2% 3cc. The day after therapy, there is no complaint, VAS was 0-1 without complications and patient was allowed dismiss from hospital.

Conclusion : Transnasal sphenopalatine ganglion block is an invasive procedure as PDPH therapy that is very rarely performed. This action can be performed if the patient has undergone conventional therapy and there has been no improvement. With this case report, we can see that the efficacy of this procedure is very good and it is recommended before an epidural blood patch is performed.

Keywords : PDPH; Post dural puncture headache; Transnasal sphenopalatine ganglion block.



INTRODUCTION

Post dural puncture headache (PDPH), is a complication of the neuraxial block anesthesia technique that cause leakage of cerebrospinal fluid (CSF) of dural defect and cause intracranial hypotension. If CSF loss is faster than CFS production itself, it can cause traction on the structures that support the brain, especially the meninges, dura and tentorium. Increased traction on blood vessels and cranial nerves can cause diplopia as well as tinnitus. Apart from that, typical symptoms in PDPH patients such as bilateral, frontal, retroorbital or occipital headaches that radiate to the neck can occur constantly or slowly and are accompanied by photophobia and nausea. Specific signs of PDPH are related to patient's position, sitting and standing will aggravate the patient's symptoms and are reduced when the patient is lying flat. Headache onset is usually 12-72 hours after the anesthetic procedure.¹

Management of PDPH is carried out starting from conventional therapy (non-pharmacological and pharmacological) and if it has not improved, invasive therapy is carried out. For invasive therapy, the gold standard is the Epidural blood patch, but this procedure is more invasive

compared to transnasal sphenopalatine ganglion block.¹

Transnasal sphenopalatine ganglion block is a minimally invasive procedure on the sphenopalatine ganglion which is an extra cranial parasympathetic ganglion in the pterygopalatine fossa. Transnasal block is carried out through the nasal opening using a stick with cotton at the end adjusted to size and a local anesthetic agent is given to block the nerve. Various research state that the efficacy of this block action is better than the Epidural blood patch action.¹⁻³

CASE ILUSTRATION :

A 37-year-old woman complained of headache extended to neck, from frontotemporal since 2 days before admission. The patient admitted that he had recurring severe headaches that interfered with activities, felt throbbing, exacerbated by changes in position, especially when sitting and standing, spinning dizziness, nausea, vomiting was denied. Patients are more comfortable if they lie down with their eyes closed. The day patient went to the hospital, patient complained of a headache like being tied up, he had been given paracetamol and mecobalamin but it had not improved. The patient did not have a history of asthma, drug allergies, diabetes mellitus, hypertension. The

medical record, patient have done section caesarean surgery with subarachnoid block, in sitting position used quinke needle no 25G 3 days before admission.

The patient was normoweight (65 kg and 162 cm with body mass index 20,89 kg/m²). The patient was vigilant, BP 104/73 mmHg, HR 75 bpm, T 36,5°C RR 20 bpm, SpO₂ 99% on nasal canulla three lpm. Physical examination and laboratory results showed normal (Table 1).

The patient was diagnosed with headache e.c post dural puncture headache post subarachnoid block POD.³

Before transnasal sphenopalatine ganglion block procedure, we had the informed consent from the patient and family. After that make sure the patient was connected to an IV line, tools and medicine were prepared (2 pieces of long swab sticks are selected sterile and not from plastic material, 1 piece of 3cc syringe injection, and handscoen). We used lidocaine 2% 3cc for the procedure.

First procedure, the patient is placed in the supine position with the cervical spine extended. The measurement of the distance from the opening of the nares to the mandibular notch directly below the zygoma can be

used to estimate the depth of cotton-tipped applicator advancement needed.

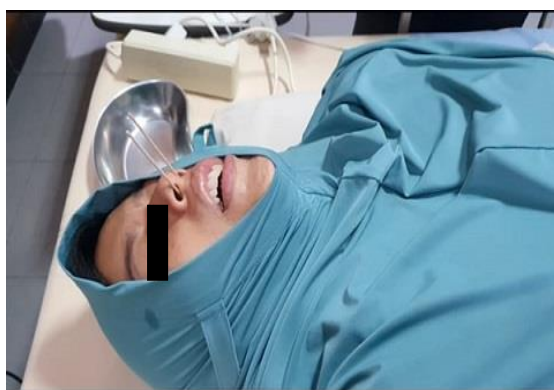
Table 1. Lab results on admisson

Lab	Results	Normal range
Leukocyte	14.9	4.50-11.50
Erythrocyte	4.0	4.60-6.00
Haemoglobin	16.3	14.0-18.0
Hematocrit	48.5	40.0-54.0
Platelets	638	150-450
PTT	9.6	9.4-12.5
APTT	35.2	25.1-36.5
INR	0.88	0.90-1.10
BUN	16	5-18
Creatinine	0.79	0.67-1.17
Glucose	94	74-106
Sodium	133	136-145
Potassium	4,7	3.5-5.1
Chloride	98	98-107

The cotton-tipped applicator is soaked in local anesthetic (lidocaine 2%). The cotton-tipped applicator is advanced into the nares parallel to the zygoma with the tip angled laterally until it lays on the nasopharyngeal mucosa posterior to the middle nasal turbinate. A second applicator may be placed slightly posterior and superior to the initial applicator. A response is seen in 5 to 10 minutes. The applicators left in position for 15 minutes.⁴



Picture 1. Transnasal sphenopalatine ganglion block with 1 applicator and soaked with lidocaine 2%.



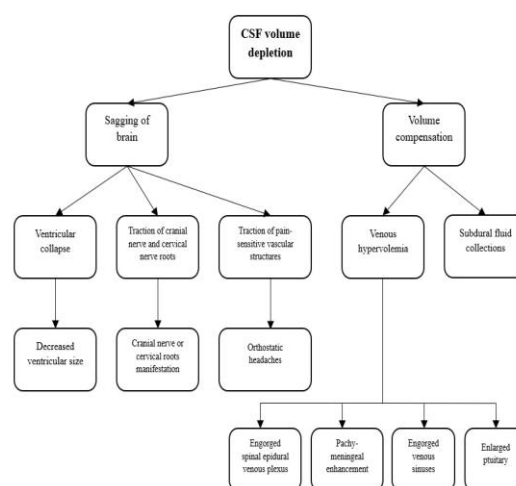
Picture 2. Transnasal sphenopalatine ganglion block with 2 applicators.

Thirty minutes after the procedure, the patient felt the headache had been decreased with VAS 3-4 from VAS 8-9. One day after the procedure, the patient had no complaint, and VAS had been decreased to 0-1 and the patient allowed to dismiss from hospital.

DISCUSSION

Post dural puncture headache (PDPH) is a complication of the neuroaxial block anesthesia technique that cause leakage of cerebrospinal fluid (CSF) from a dural defect and intracranial hypotension. Typical symptoms, PDPH is bilateral, frontal, retroorbital or occipital headaches and

extends into the neck constantly or slowly, and associated with photophobia and nausea. Management treatment of PDPH starting from conventional therapy (non-pharmacological and pharmacological) and invasive therapy including transnasal sphenopalatine ganglion block and as a gold standard is epidural blood patch that more invasive.¹



Picture 3. Diagram of “leakage theory”³.

The patient had symptoms of headache in the frontotemporal area radiating to the neck since two days before admission. The patient admitted that he had recurrent severe headaches that interfered with his activities, felt like he was feeling cramped, aggravated by changes in position, especially when sitting and standing, the patient have no dizziness, nausea, and vomiting. Patients are more comfortable if they lie down with their eyes closed. The patient had caesarean section surgery with

subarachnoid block anesthesia in sitting position with a Quincke needle no. 25G (in a private hospital) three days before admission.

Treatment for PDPH is conventional and invasive. Conventional therapy itself consists of non-pharmacological such as positioning and hydration, and pharmacological such as administering acetaminophen, NSAIDs, opioids and caffeine. While invasive therapy itself consists of sphenopalatine ganglion block and epidural blood patch.¹

This patient has been given NSAID therapy, mecobalamin, paracetamol, positioning and hydration complaints have not improved and decided to do transnasal sphenopalatine ganglion block as a minimally invasive therapy with quite good efficacy.

The sphenopalatine ganglion (SPG) is an extracranial parasympathetic ganglion located within the pterygopalatine fossa. The borders of the pterygopalatine fossa are as follows: (1) anterior border - posterior wall of the maxillary sinus, (2) posterior border - medial pterygoid plate, (3) superior border - sphenoid sinus, (4) medial border - a perpendicular plate of the palatine bone, and (5) lateral border - communicates with the infratemporal fossa. It lies posterior to the middle

nasal turbinate and maxillary sinus, forming multiple autonomic, sensory, and motor neural connections. The sphenopalatine ganglion lies posterior to the middle nasal turbinate and maxillary sinus, forming many autonomic, sensory, and motor nerve connections.^{2,3}

Because SPG plays a role in the innervation of cerebral vascularization, and thus has been described in the “trigeminal vascular system,” it has been suggested that it may be involved in some forms of vascular headache and atypical facial pain.^{2,3}

The efficacy of the procedure from various research states that sphenopalatine ganglion block is better in terms of onset, length of stay, and speed of recovery for patients.⁵⁻⁹

CONCLUSION

Transnasal sphenopalatine ganglion block is an invasive procedure as PDPH therapy that is very rarely performed. This action can be performed if the patient has undergone conventional therapy and there has been no improvement. With this case report, we can see that the efficacy of this procedure is very good and it is recommended before an epidural blood patch is performed.

REFERENCE

1. Butterworth J, Mackey D, Wasnick J. Morgan and Mikhail's Clinical Anesthesiology. United States: McGraw Hill Medical; 2022. Chapter 45 : 1599p.
2. Jankovic D, Peng P. Regional Nerve Blocks in Anesthesia and Pain Therapy. Fourth Edi. Switzerland: Springer; 2015. Chapter 11 : 162p.
3. Seale C, Day M. Sphenopalatine Ganglion Block. Essentials Interv Tech Manag Chronic Pain Second Ed [Internet]. 2022 Nov 16 [cited 2025 Oct 20];787–98. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK557751/>
4. Channabasappa SM, Manjunath S, Bommalingappa B, Ramachandra S, Banuprakash S. Transnasal sphenopalatine ganglion block for the treatment of postdural puncture headache following spinal anesthesia. Saudi J Anaesth [Internet]. 2017 Jul 1 [cited 2025 Oct 20];11(3):362. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC5516510/>
5. Jespersen MS, Jaeger P, Ægidius KL, Fabritius ML, Duch P, Rye I, et al. Sphenopalatine ganglion block for the treatment of postdural puncture headache: a randomised, blinded, clinical trial. Br J Anaesth [Internet]. 2020;124(6):739–47. Available from: <https://doi.org/10.1016/j.bja.2020.02.025>
6. Cohen S, Levin D, Mellender S, Zhao R, Patel P, Grubb W, et al. Topical Sphenopalatine Ganglion Block Compared With Epidural Blood Patch for Postdural Puncture Headache Management in Postpartum Patients: A Retrospective Review. Reg Anesth Pain Med [Internet]. 2018 Nov 1 [cited 2025 Oct 20];43(8):880–4. Available from: <https://rapm.bmj.com/content/43/8/880>
7. Kent S, Mehaffey G. Transnasal sphenopalatine ganglion block for the treatment of postdural puncture headache in obstetric patients. J Clin Anesth [Internet]. 2016 Nov 1 [cited 2025 Oct 20];34:194–6. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S0952818016301209>
8. Albaqami MS, Alwarhi FI, Alqarni AA. The efficacy of sphenopalatine ganglion block for

- the treatment of postdural puncture headache among obstetric population. Saudi J Anaesth [Internet]. 2022 Jan 1 [cited 2025 Oct 20];16(1):45. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/PMC8846236/>
9. Santos NS, Nunes JM, Font ML, Carmona C, Castro MM. Early versus late sphenopalatine ganglion block with ropivacaine in postdural puncture headache: an observational study. Brazilian J Anesthesiol (English Ed [Internet]. 2023;73(1):42–5. Available from: <https://doi.org/10.1016/j.bjane.2021.01.007>