

Sphenopalatine Ganglion Block: A New Therapeutic Approach for Postdural Puncture Headache

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ABSTRACT

Introduction: Postdural puncture headache¹ (PDPH) is an occipitofrontal type of headache, a known complication of subarachnoid block or spinal anesthesia. There are several forms of treatments available for PDPH that includes conservative treatments such as bed rest with 15 degree head down, abdominal binders, pharmacological therapy with caffeine, paracetamol, sumatriptan, pregabalin, or nonsteroidal antiinflammatory drugs. Epidural blood patch is the gold standard when supportive treatment fails. Still PDPH remains a difficult situation for clinicians.

Materials and methods: Sphenopalatine ganglion is a parasympathetic ganglion through which sympathetic nerves passes. Sphenopalatine ganglion block has been used for treatment of different types of headache including cluster headache, migraine and atypical facial pain. Transnasal sphenopalatine ganglion block (SPGB) is being used recently for the management of PDPH also. Transnasal Sphenopalatine ganglion block is a noninvasive procedure in which local anesthetic is applied locally to the mucosal surface on the posterior pharyngeal wall superior to middle turbinate under which lies the sphenopalatine ganglion.

Discussion: Review of literature supports the use of SPGB in PDPH. It is becoming popular for its simplicity in use and high success rate compared to epidural blood patch.

Keywords: Postdural puncture headache, Sphenopalatine ganglion block, Spinal anesthesia.

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Postdural puncture headache¹ (PDPH) is one of the most exhausting complications of subarachnoid block or inadvertent dural puncture, leading to excessive leakage of cerebrospinal fluid (CSF) causing intracranial hypotension and demonstrable reduction in CSF volume.

The treatment of PDPH is a challenge for both the physician as well as the patient; various drugs and interventions have been tried, but the most effective of them being the epidural blood patch (EBP).² It has a success ranging from 68 to 90%³ but is again an invasive procedure involving a repeat of dural puncture having known complications such as subdural hematoma,⁴ infection, meningitis, and delayed radicular pain.⁵

The use of noninvasive measures such as SPGB and occipital nerve block^{6,7} has been found to be almost equally effective when used in conjunction with conservative methods in comparison to the conventional gold standard method of EBP.⁸ Sphenopalatine ganglion block is absolutely a noninvasive intervention with minimal adverse effects and high efficacy, had been tried as a treatment modality of PDPH,⁹⁻¹³ and its success has been reported in a number of case series and case reports showing management of PDPH in obstetric patients and other patients.^{11,13,14} In all these publications, SPGB has been claimed as an effective measure for the treatment of PDPH by using it in conjunction with conservative treatment.

Windsor et al.¹⁵ demonstrated the effectivity of SPGB through transnasal route for the treatment of headache in herpetic keratitis. Over the years, the role of SPBG had been found to be effective in various forms of headache by Cady et al.¹⁶ in the treatment of acute or chronic migraine. Similarly, Candido et al.¹⁷ used SPBG effectively in the treatment of headache and facial pain.

Kent et al.¹⁸ got remarkable good results with transnasal SPGB using 2% lignocaine in PDPH refractory to conservative measures in a study comprising 3 postcaesarian patients and proposed it to be a better alternative for EBP.

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Cardoso et al.¹⁹ used 0.5% levobupivacaine under standard ASA monitoring for SPGB in a 41-year-old female patient presented with PDPH in ambulatory setting who was refractory to treatment with one liter of crystalloids, 4 mg dexamethasone, 40 mg parecoxib, 1 g acetaminophen with 500 mg caffeine after 2 hours. It was shown in the study that SPGB yielded symptomatic relief at 5 minutes and persistent pain relief at 1 hour. Kochhar et al.¹² conducted a randomized control study on all adult nonobstetric patients referred to pain clinic with complaints of headache and associated symptoms following spinal anesthesia (suggestive of PDPH) in which SPGB was done with 4% lignocaine solution. The study compared the effects of combined SPGB and conservative treatment with conservative treatment alone in the management of PDPH in a sample of total 24 patients (15 female and 9 male) over a period of 1 year. Conservative treatments included bed rest, fluid therapy, tablet diclofenac sodium 75 mg BD P/O, paracetamol with caffeine 2 tablets P/O, and SPGB was repeated every 24 hours till complete relief was achieved showing a VAS of <2. This study

concluded that SPGB is an effective method of treating PDPH with good success rate as compared to conservative treatment.

Puthenveetil et al.¹³ conducted a prospective unblinded observational study on 20 obstetric postcaesarian patients over a period of 1 year. Control group received intravenous paracetamol 1 g thrice daily and 75 mg diclofenac twice daily was used as rescue analgesic whereas the test group received transnasal SPGB with 2% lignocaine and then 1 g intravenous paracetamol thrice daily with tablet diclofenac 75 mg P/O twice daily was given as rescue analgesic if the pain score was more than 4 according to VAS scale after 2 hours. Pain was assessed before procedure, 30 minutes, 1, 2, 4, 6, 8, 12, and 24 hours after the procedure. Patients in both the groups without adequate pain relief for more than 3 days were considered for EBP. The primary objective was to study the efficacy of SPGB for the treatment of PDPH over conservative methods and the results showed accordingly.

Furtado et al.¹¹ used ropivacaine 0.75% for SPGB in 4 obstetric patients yielding good results and Dubey et al.²⁰ used 2 puffs of 10% lignocaine spray for transnasal SPGB with an intention to reduce the invasiveness compared to cotton-tipped applicators showing good results.

In another retrospective review, Cohen et al.⁹ compared SPGB with EBP on 42 and 39 patients, respectively, where residual headache, recovery from associated symptoms, and new treatment complications were studied between 2 groups at 30 minutes, 1 hour, 24 hours, 48 hours, and 1 week posttreatment. It showed that a greater number of patients had a significant relief in their PDPH and associated symptoms at 30 and 60 minutes after treatment with SPGB than after treatment with EBP (p value < 0.01). Only the EBP patients complained of posttreatment complications all of which resolved in 48 hours thus concluding that a greater number of patients experienced a quicker onset of headache relief, without any new complications, from treatment with SPGB vs EBP.

Sphenopalatine ganglion block may attenuate cerebral vasodilation induced by parasympathetic stimulation which is transmitted through the neurons synapsing in the sphenopalatine ganglion.^{21,22} This is supported by the Monro-Kellie concept and would explain why caffeine and sumatriptan can have some effect on the treatment of PDPH. Sphenopalatine ganglion block has a faster onset than epidural blood patch with better safety profile.

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