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**Dr. Kadam Sandeep**  
Associate Professor- D.Y. Patil  
Medical College, Kolhapur,  
Maharashtra, India

**Dr. Adda Sravya**  
Junior Resident- D.Y. Patil  
Medical College, Kolhapur,  
Kolhapur, Maharashtra, India

**Dr. Rashmi NS**  
Junior resident- D.Y. Patil  
Medical College, Kolhapur,  
Kolhapur, Maharashtra, India

**Dr. P Prithiv Rishardhan**  
Junior Resident- D.Y. Patil  
Medical College, Kolhapur,  
Kolhapur, Maharashtra, India

## Treat PDPH (Post dural puncture headache) with sphenopalatine ganglion block: Transnasal approach

**Dr. Kadam Sandeep, Dr. Adda Sravya, Dr. Rashmi NS and Dr. P Prithiv Rishardhan**

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### Abstract

**Background and Study Objective:** To treat PDPH by simple and effective means using transnasal Sphenopalatine ganglion block.

PDPH (post dural puncture headache) is one of the very well known complications. Management of PDPH is always challenging to anesthesiologist. Though the incidence of PDPH has reduced with new small spinal needles and needle tip designs, still occasional PDPH cases are observed.

**Keywords:** PDPH, sphenopalatine ganglion, transnasal

### Introduction

#### Case 1

A 23 year male, ASA 1 patient after undergoing spinal anaesthesia for right tibia plating came with complain of dull throbbing headache frontal- occipital region 24 hours post-operatively. Headache aggravated on sitting position and relieved on supine position. Patient also complained of one episode of vomiting and mild neck stiffness but no other signs of meningitis were present. Patient had no complains of tinnitus, hypoacusia and photophobia. Investigation, complete blood counts were also within normal range. Clinical diagnosis of PDPH was made.

**Management:** After the diagnosis initially conservative management was undertaken. Patient was given complete bed rest in supine position for 24 hours and IV fluids, increase oral intake of water and caffeine and abdominal binders were advised. Patient was examined again after 24 hours, the patient complained of presence persistent pain corresponding to VAS score 8.

**SPG Block:** Under all aseptic precautions SPG block was given to the patient bed side. Both the nostrils were initially sprayed with 10% lox spray and the middle turbinate were packed with gauge soaked in 4% lox.

The gauges were kept in place for 20 minutes with patient in supine position. After removal of pack VAS score when reassessed and was 2 in both supine and sitting position.

VAS score was reassessed after 6 and 12 hours was found to be <sup>[2]</sup>.



**Corresponding Author:**  
**Dr. Kadam Sandeep**  
Associate Professor- D.Y. Patil  
Medical College, Kolhapur,  
Kolhapur, Maharashtra, India

### Case 2

23 yr old female 2<sup>nd</sup> gravida, 36 weeks of pregnancy case of PIH on tab labetalol 100 mg BD, previous LSCS 2 yrs back with fetal distress underwent emergency LSCS under spinal anesthesia with 25G quincke needle. She started with headache in occipital region with neck pain 3<sup>rd</sup> postoperative day which aggravated on sitting position and relieved in supine. No complaints fever vomiting, her BP was under control

**Management:** She was treated with bedrest, NSAIDS, IV fluids her pain did not relieve with persistent VAS score of 8-9.

So we decided to manage the case with SPG block, First 10% xylocaine was sprayed in each nostril with spray nozzle.

Later each nostril was packed with gauge soaked with 4% xylocaine. pack was kept for 20mins, VAS score was assessed immediately after removal of nasal pack was 1. VAS score was reassessed after 6,12 and 24 hours vas score was 2, 4 and 6 respectively.

After 24 hours as the VAS was 6, we decided to reblock SPG. Xylocaine 10% was sprayed deep inside each nostril aiming lateral wall of nose above middle turbinate. Patient was relieved of pain within 2 mins of spray hence we decided not to pack the nose with gauge soaked in xylocaine. patient was reassessed at 2,6, 12 and 24 hours and her VAS score were 2,2,0,0 respectively.

### Case 3

42 year female patient with bilateral ureteric calculi was operated for bilateral ureteroscopy and lithoclast under spinal anesthesia using 25 G quincke spinal needle. On 2<sup>nd</sup> post operative day she complained of headache in occipital and frontal region which aggravated on standing and sitting position with VAS score of [7, 8].

**Management:** she was initially treated conservatively with IV fluids, bedrest and NSAIDS and was reassessed after 48 hours. VAS was persistently 8. She was later treated with SPG block by nasal spray of 10% xylocaine and nasal packing was done with 4% xylocaine. Pack was kept for 20mins. Conservative management was also continued. patient was reassessed after 6, 12 and 24 hours, VAS was 3,2,1 respectively.

### Discussion

PDPH is a well known distressing complication. PDPH occurs due to the continuous loss of cerebrospinal fluid (CSF), higher than its production rate at the point of approach of the Dura-mater and reflex vasodilatation of the meningeal vessels. (1) Vasodilation is mediated by the parasympathetic activity of neurons that have synapses in the sphenopalatine ganglion, this explains relief of PDPH by SPGB (6). There is also consequent traction on the meninges due to loss of CSF which causes headache.

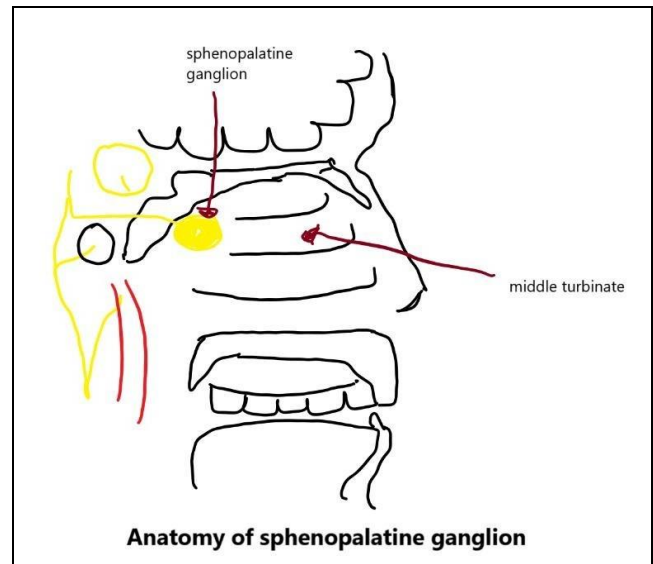
Various methods have been used as treatment modality of PDPH. Initial treatment modality considered is conservative which includes flat bed rest, hydration, caffeine intake and drugs like sumatriptan and gabapentin, if still persistent then epidural autologous blood patch (EBP) is performed. EBP is considered gold standard for treatment of PDPH. The clot formed by the EBP seals the Dural puncture and the rapid formation of CSF allows for rapid restoration of CSF

volume and resolution of the PDPH. EBP is more invasive as compared to SPG block and has its own contraindication (include those that normally apply to epidurals, but include a raised white cell count, pyrexia and technical difficulties) and complications (Immediate exacerbation of symptoms and radicular pain have been described)

The sphenopalatine ganglion (SPG) is a parasympathetic ganglion, located in the pterygopalatine fossa and is posterior to middle nasal turbinate. The SPG block has been used for treating headaches of varying causes. It is said to be parasympathetic ganglion as pre ganglionic parasympathetic axons synapse within the ganglion, but few sensory branches of maxillary nerve and post-ganglionic sympathetic neurons also pass through it.

SPG block has been used to treat various chronic pain syndromes such as cluster headache, CRPS, TMJ pain, post herpetic neuralgia etc.

SPG can be approached by lateral infratemporal approach, subzygomatic approach, transoral or trans nasal approach. Transnasal approach is a non-invasive and a simple technique which can be performed at the bedside with patient in supine position. The patient is given supine position with extension at neck and cotton swab soaked in local anesthetic is applied at the middle turbinate with help of a applicator or bilateral nasal packing is done with gauge soaked in local anesthetic or using nasal spray of 10% xylocaine. Though the swab doesn't come in direct contact with SPG, but the local anesthetic infiltrates around it causing the block.



Cohen *et al.* first published the use of SPG block for management of PDPH in 2009 [7]

Patel *et al.* performed a retrospective study on 72 patients. The patients were divided in two groups, one group receiving epidural blood patch (EBP) and the other bilateral SPG block. He found that the group that received SPG block had better pain relief after 1 hour of block being given, compared to the group that received EBP but the overall pain relief after 24 hours have been found to be similar [1]. Similar observation has been seen in our 3 cases (i.e) patient had immediate pain relief within 1 hour and was comfortable for 24 hours.

Kent *et al.* used SPG in 3 cases of PDPH in obstetric patients with good results, in our study we had one obstetric patient.

Preksha dubey *et al* used intranasal spray for SPG block for PDPH [8]. They utilized 10% xylocaine spray instead of cotton swab soaked with 2% or 4% xylocaine to block SPG. In our study in all three patients we initially sprayed 10% xylocaine in each nostril and then nasal packing was done. In 2<sup>nd</sup> cases when after 24 hours patient had a VAS score of 6 we just sprayed 10% xylocaine which relieved her pain immediately and this time no further nasal packing was done.

No EBP was needed in any of our cases hence, bilateral SPG block holds superior compared to EBP in being a non invasive and simple procedure with lesser complications. It can be considered as a ideal 1<sup>st</sup> line management for treatment of PDPH in future. Our case studies were limited to 3 cases, we need to carry out a larger study to further validate our results.

**Declaration of patient:** Appropriate patient consent has been taken for publishing photos and clinical information in the journal.

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