

# Postdural Puncture Headache

## An Evidence-Based Approach



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### KEYWORDS

- Accidental dural puncture • Postdural puncture headache • Epidural blood patch
- Intrathecal catheter

### KEY POINTS

- According to the International Headache Society, a postdural puncture headache (PDPHA) is any headache that develops within 5 days of dural puncture and is not better accounted for by any other cause. It is usually accompanied by neck stiffness and subjective hearing symptoms.
- Headache and backache may persist after accidental dural puncture beyond 6 weeks in a small subset of the population.
- Obesity may decrease the incidence of headache after accidental dural puncture. It definitely does not increase the risk of a patient developing a headache after accidental dural puncture.
- The incidence of PDPHA is greater in women who deliver vaginally compared with those who deliver by cesarean delivery.
- The data concerning prophylactic epidural blood patch are conflicting. If an epidural catheter is resited after accidental dural puncture and the placement was difficult, a prophylactic epidural blood patch may be helpful.

### INTRODUCTION

Headache is the most common complication after neuraxial anesthesia, especially in obstetric anesthesia. The problem with headaches in postpartum parturients is that the headache may be due to one of several causes, as outlined in **Box 1**.<sup>1</sup> Most non-anesthesiologists automatically assume that a headache in a parturient who received neuraxial anesthesia is due to the anesthetic. The majority of headaches occurring in the postpartum period, however, are due to tension, with preeclampsia being the second leading reason. PDPHA is a leading cause of lawsuits.<sup>2</sup> It is surprising that a condition that may reasonably be managed results in lawsuits. This fact reflects the disappointment patients experience when this complication occurs as well as that

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**Box 1**  
**Causes of postpartum headaches**

Stress  
Preeclampsia  
Dural puncture  
Caffeine withdrawal  
Pain  
Breastfeeding

they feel that they have not received appropriate follow-up. Given this background, it is not surprising that there has been significant investigation into the diagnosis and management of PDPHA.

**PATHOPHYSIOLOGY OF POSTDURAL PUNCTURE HEADACHE**

A PDPHA is due to loss of cerebrospinal fluid. In patients with accidental dural puncture who had MRI, headache was associated with more extensive and more rostral distributions of periradicular leaks and epidural collections.<sup>3</sup> Furthermore, these leaks were not restricted to the level of the dural defect, although the majority did remain within the location of the accidental dural puncture. According to the International Headache Society, a PDPHA is any headache that develops within 5 days of dural puncture and is not better accounted for by any other cause. It is usually accompanied by neck stiffness and subjective hearing symptoms.<sup>4</sup> It also usually remits spontaneously within 2 weeks or after sealing of the leak with an epidural blood patch. These diagnostic criteria are different from the criteria established in 2012 in which the criteria included worsening within 15 minutes of assuming the upright position and disappearing within 15 minutes of assuming the supine position. The headache typically occurs in the frontal and occipital areas and also has a positional component. Although it generally occurs within 48 hours of the dural puncture, it may occur later than 3 days after the dural puncture in 25% of the cases. Although an overwhelming majority of cases develop a positional headache where assuming the upright position worsens the headache, there are a minority of patients who develop an atypical headache in which the headache is worse with assuming the recumbent position. In a series of 27,064 neuraxial anesthetics in pregnant patients, 142 patients experienced an accidental dural puncture; 8 of these patients developed this atypical headache.<sup>5</sup> The headache did have visual disturbances accompanying it; however, it worsened with assuming a recumbent position and improved with assuming the upright position. Furthermore, the headache improved with an epidural blood patch. All these factors, except the positional aspects, suggested the headache was due to the dural puncture. The importance of this study is to remember that not all headaches from dural puncture exhibit the typical change in symptoms with assuming various positions.

Other symptoms that accompany a PDPHA include nausea, vomiting, neck stiffness, visual disturbances, and hearing alteration. Visual disturbances (blurred vision or double vision) are due to dysfunction of the extraocular muscles from transient paralysis of the cranial nerves of the eye (III, IV, and VI). These symptoms occur due to traction on the nerve from the downward displacement of the cranial contents. Of these nerves, cranial nerve VI is the most frequently affected because of its acute angulation within the cranium with the acute angulation near a point of fixation, placing

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