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Addressing Postdural Puncture Headache: Guiding Clinicians Through Diagnosis and Management

Dibash Kumar Das, PhD Pamela Flood, MD, MA

Postdural puncture headache (PDPH) is a well-recognized complication resulting from a dural puncture during epidural analgesia, spinal anesthesia, or other neuraxial interventions. The incidence of unintended dural puncture during placement of an epidural catheter ranges widely, from less than 1% to approximately 40%, based upon procedural and patient factors (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). PDPH typically presents within five days postpuncture with clinical features that include headache, neck stiffness, hearing symptoms, and visual disturbances, among others (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387; asamonitor.pub/3U0KPcE). These symptoms are due to low cerebrospinal fluid (CSF) pressure from leakage (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387; *Cephalalgia* 2018;38:1-211).

While some headaches subside within two weeks, particularly those from small-gauge needle punctures, their severity can significantly disrupt daily activities, especially for postpartum patients caring for newborns (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). Severe complications can include chronic headache, backache, subdural hematoma, and cerebral venous sinus thrombosis (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387).

Postdural puncture headaches caused by large epidural needles typically do not

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ASA Community: The Meeting Place for Today's Informed Anesthesiologist

George Tewfik, MD, MBA, FASA, CPE, MSBA

ASA Community is an invaluable tool available to all of ASA's more than 57,000 members. It is a member-exclusive online discussion forum that often reflects the most important issues of the day pertaining to the daily practice of anesthesiology. On a normal weekday, about 12,000 people read the community's daily digest email, and the forum website averages 10,000 page views a week. In 2023, there were more than 500 new discussion threads that covered topics ranging from quantitative train-of-four monitoring and medications that may affect climate change, to

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Advancing Perioperative Brain Health: Insights from ANESTHESIOLOGY® 2023 Abstracts

Donna Ron, MD Stacie Deiner, MD, MS Daniel J. Cole, MD, FASA

The ANESTHESIOLOGY® annual meeting acts as a conduit for pioneering research, with several abstracts presented in 2023 that shed light on different aspects of perioperative brain health. Four thought-provoking abstracts are synthesized below and in the Figure. These abstracts not only offer novel insights into preoperative cognitive assessments, machine learning applications, and benzodiazepine use, but also lay the groundwork for potential advancements in predicting and preventing postoperative cognitive complications.

Preoperative self-screening cognitive test for postoperative delirium risk

Dr. Kotaro Gunji and colleagues from Shimane University Hospital in Japan presented their abstract examining the utility

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PERIODICALS

In the Know: Postdural Puncture Headache

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resolve as quickly as those caused by spinal needles. Small retrospective studies over the past 25 years have identified long-term consequences of dural puncture, including new onset of chronic headache or worsening of existing headache with significant disability (*Can J Anaesth* 2019;66:1464e71; *Minerva Anestesiol* 2019;85:543e53; *Anesth Analg* 2019;129:1328e36; *BMJ* 1993;306:883e5; *Int J Obstet Anesth* 2001;10:17e24; *Anesth Analg* 2012;115:124e32; *J Clin Anesth* 2015;27:201e6; *Headache* 2019;59:97-103; *J Clin Anesth* 2022;79:110787). More recently, three prospective trials have confirmed that approximately 20%-30% of parturients who experience unintentional dural puncture during epidural placement have prolonged symptoms that include significant pain and disability (*J Clin Anesth* 2022;79:110787)

Gaps in prior recommendations and a new consensus guideline on PDPH

Previous reviews with recommendations for the prevention of dural puncture and its best management have been limited by reliance on data from small, underpowered studies that were inconclusive and/or have provided variable results (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). This year, a concerted effort involving experts representing six prominent societies – ASRA Pain Medicine, European Society of Regional Anaesthesia & Pain Therapy, Society for Obstetric Anesthesia and Perinatology, Obstetric Anaesthetists' Association, American Society of Spine Radiology, and the American Interventional Headache Society – sought to bridge this gap by furnishing comprehensive information and patient-centered recommendations (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). The new guidelines aim to empower clinicians with effective strategies for preventing, diagnosing, and managing PDPH, thereby enhancing patient care and safety (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387).

Methodology behind comprehensive guidelines

The development of these comprehensive guidelines involved an intricate process: 10 critical review questions were prepared, shaping the foundation for an exhaustive exploration of the prevention, diagnosis, and management of PDPH (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). In subsequent collaborative efforts, these diverse practitioners utilized a modified Delphi approach to reach their conclusions. The results have yielded a comprehensive set of 50 recommendations aimed at guiding health care professionals in managing PDPH (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). These recommendations span risk factors, prevention strategies, diagnosis, and management. A notable aspect was the attainment of 90%-100% consensus for almost all recommendations after two rounds of thorough voting (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387).

Focused critical review questions

The comprehensive recommendations were structured around 10 questions, with each accompanied by statements and recommendations (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). These topics delve into identifying PDPH, factors associated with its incidence, procedural characteristics that may impact its occurrence, preventive measures that include conservative and procedural interventions, the requirement for imaging, contraindications to epidural blood patch, methods and considerations for performing epidural blood patch, long-term complications, and patient follow-up strategies (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). The guidelines, developed to improve the understanding and management of PDPH, encompass diverse facets crucial for clinicians navigating this challenging terrain. Key findings include:

***Identification of PDPH and diagnostic nuances*:** Emphasizing the importance of early detection, the guidelines note that suspicions of PDPH should be taken seriously when patients encounter headaches or neurological symptoms within five days of undergoing neuraxial procedures despite a history of previous headache. The distinctive relief upon reclining flat may also serve as a hallmark sign, motivating clinicians to encourage patients to promptly report these symptoms for thorough evaluation (high certainty). However, postural change is not present in all patients.

***Demographic vulnerabilities*:** Addressing pivotal risk factors, the guidelines underscore the heightened susceptibility of younger adults, women, and parturients to PDPH. This recognition underscores the importance of considering these demographics as indicators, aiding clinicians in proactive risk assessment and early intervention (high certainty).

***Procedural insights*:** Delving into procedural intricacies, the guidelines advocate for the use of noncutting spinal needles and smaller-gauge needles for lumbar punctures, thus significantly reducing the risk of PDPH. This directive highlights the importance of routine adoption of these practices to minimize postprocedural complications (high certainty).

***Balancing preventive measures and treatment approaches*:** While the guidelines caution against the routine use of prophylactic epidural blood patching due to insufficient evidence (low certainty), they recommend multimodal analgesia, comprising acetaminophen and NSAIDs, as a viable treatment option unless contraindicated (low certainty). Furthermore, the guidelines advise against the routine application of acupuncture or sphenopalatine ganglion blocks, citing inadequate evidence to support their efficacy in PDPH management (low certainty).

***Imaging precision and contraindications*:** Advocating for a nuanced approach, the guidelines point to insufficient evidence surrounding routine cranial imaging before epidural blood patching. This would be very expensive. Additionally, the guidelines emphasize the need for cautious consideration in neuraxial procedures based on platelet counts and coagulation abnormalities (low to moderate certainty).

Epidural blood patching and long-term implications: While acknowledging uncertainties regarding the optimal volume for an epidural blood patch, the guidelines propose its consideration when conservative therapies fail and significantly impair daily life (low to moderate certainty). Further, evidence linking PDPH with chronic headaches, backaches, and depression underscores the necessity for proactive patient education and continuous monitoring (moderate certainty) (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387).

Structured guidelines for PDPH management

The current guidelines offer an evidence-based framework to tackle crucial aspects of PDPH, aiming to provide a united front against its associated morbidity, mortality, and economic burdens. These guidelines highlight the need to continually adapt diagnostic criteria in line with the evolving understanding of PDPH's pathophysiology.

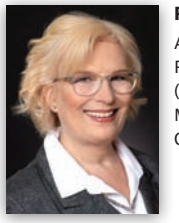
Proactive measures and future directions

Emphasizing proactive risk assessment before dural puncture procedures, the guidelines advocate for a comprehensive evaluation of factors such as needle type, size, and patient demographics to minimize risks as noted above (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). Furthermore, they stress the necessity for appropriate informed consent and post-discharge follow-up protocols in institutions offering neuraxial procedures, integrating inpatient and outpatient services for effective PDPH management, and complication prevention.

The guidelines acknowledge limitations due to diverse practice conditions and a lack of representation across all patient demographics in current studies. Future research is imperative to explore diagnostic, therapeutic effectiveness and strategies to prevent complications, especially considering the current moderate to low certainty of evidence that is available on several of the topics noted above (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387).

The new guidelines do not address the importance of telling parturients that chronic headache may be a complication of unintentional dural puncture during labor epidural in the consent process or after a complication has occurred. As discussed previously in the *ASA Monitor*, it is important to share this risk when getting informed consent so parturients can consider this when weighing risks and benefits (asamonitor.pub/48xMWZW). Additionally, if a parturient gets a chronic headache following a wet tap, knowing that this is a potential complication can help her seek appropriate medical care. It can also help her care provider, who may be a gynecologist, family practitioner, or internist, understand the potential benefit of an epidural blood patch, which typically would not be considered a therapy for chronic headache.

In summary, these guidelines provide a critical foundation for clinicians, emphasizing the need for a vigilant approach in diagnosing, managing, and preventing complications related to PDPH. Proper consent and follow-up are particularly needed with evolving consensus regarding long-term complications after PDPH. As new evidence emerges, ongoing refinement and dissemination of these guidelines within health care facilities performing neuraxial procedures will be pivotal in improving patient care and policy implementation (*Reg Anesth Pain Med* August 2023; *JAMA Netw Open* 2023;6:e2325387). ■



Pamela Flood, MD, MA
Adjunct Professor, Anesthesiology, Perioperative and Pain Medicine (OB and Pain), Stanford University Medical Center, Stanford, California.

Dibash K. Das holds a PhD in molecular, cellular, and developmental biology from CUNY Graduate Center and an advanced certificate in clinical and translational investigation from Weill Cornell Medicine.