

Atypical Post–Dural Puncture Headache: Bilateral Subdural Hematomas Four Weeks After Epidural Placement

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Background

- ▶ Post-dural puncture headaches (PDPHs) are generally self-limited positional headaches occurring within days of epidural placement and may also present with cranial nerve deficits. While the pathophysiology of PDPHs has not been clearly elucidated, persistent cerebrospinal fluid (CSF) leakage may lead to intracranial hypotension and meningeal venodilation, stretching intracranial sensory nerves.
- ▶ CSF is produced in the choroid plexus at a rate of 0.35 ml/min. Imbalance of production, flow, or absorption can cause decreased ICP and sagging of the brain within the skull.
- ▶ In a large obstetric cohort study including over 22 million deliveries, the rate of subdural hematoma in the 2-month postpartum period after neuraxial anesthesia was ~1.5/100,000 deliveries (~0.0015%).
- ▶ Unintentional dural puncture (UDP) with an epidural needle occurs <1-6%.
- ▶ Reported incidence of PDPH after UDP with an epidural needle is between 81-88%.

Case Presentation

- ▶ We present the case of a 20-year-old, primigravid woman (5'4" 105kg BMI 45.2 kg/m2) at 39.5 weeks gestation with a history of morbid obesity, polyhydramnios, and hyperemesis gravidarum presenting for induction of labor. The patient underwent epidural catheter placement, complicated by multiple attempts and inadvertent dural puncture. The catheter was removed after the return of CSF, and a subsequent epidural placement was successful. The patient had an uncomplicated vaginal delivery, denied headache or paresthesias on postpartum day one, and was discharged. The patient later reported the development of positional headaches beginning two weeks postpartum.
- ▶ At three weeks postpartum, the patient presented to an outside facility, where she was given intravenous (IV) fluids and pain medications without any relief of symptoms.
- ▶ Four weeks postpartum, the patient presented to the emergency department (ED), and a head computed tomography (CT) revealed bilateral subdural hematomas with mild cerebellar tonsillar ectopia. Management included neurosurgical consultation, neurologic monitoring, serial head imaging, and two fluoroscopy-guided epidural blood patches, resulting in clinical improvement.

Images

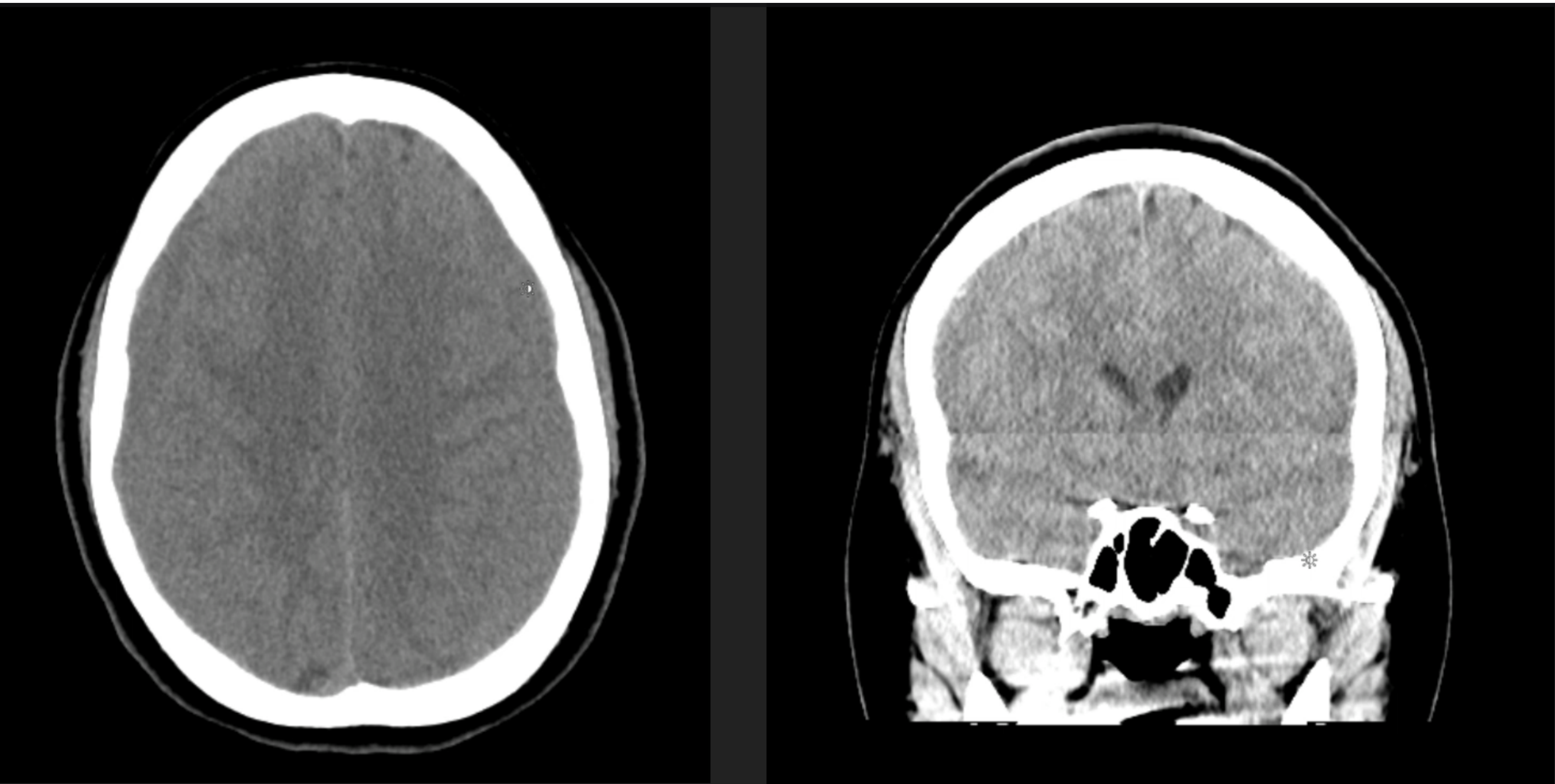


Figure 1: CT Head. Bilateral subdural hematomas and mild cerebellar tonsillar ectopic. Findings favored to reflect sequela of intracranial hypotension.



Figure 2: Fluoroscopy-guided EBP

Figure 3: CT Head without contrast. Minimally increased bilateral subdural collection



Discussion

- ▶ What factors contributed to the development of the subdural hematomas and are there opportunities for early recognition?
 - ▶ Multiple risk factors: female sex, pregnancy, multiple puncture attempts, delayed diagnosis
 - ▶ Potentially missed atypical features: diurnal headache, late onset
- ▶ Neural pathways involving the ophthalmic branch of the trigeminal nerve (CN V1), CN VI (abducens nerve palsy), CN IX and X, C1-C3
- ▶ No pharmacological prophylaxis for PDPH has been confirmed.
- ▶ Diagnostic evaluation may include firm bilateral jugular venous pressure or the sitting epigastric pressure test.
- ▶ Initial management for a PDPH: oral caffeine, bed rest, oral analgesics and antiemetics, hydration, abdominal binders, cosyntropin
- ▶ Definitive management: epidural blood patch

Conclusion

This case highlights the importance of recognizing delayed and atypical presentations of PDPH. Multiple epidural attempts and suspected dural puncture should prompt vigilance and patient education if positional headaches develop. It is prudent to maintain a high index of suspicion for complications when a PDPH is severe, atypical, or persistent. Timely escalation and early imaging for red flags are essential.

References

- Al-Hashel J, Rady A, Massoud F, Ismail I. Postdural puncture headache: a prospective study on incidence, risk factors, and clinical characterization of 285 consecutive procedures. *BMC Neurol* 22,261 (2022). <https://doi.org/10.1186/s12883-022-02785-0>
- Bateman B, Cole N, Sun-Edelstein, C. *Postdural puncture headache*. In: Post TW, ed. UpToDate Inc. Accessed November 26, 2025. <https://www.uptodate.com/contents/post-dural-puncture-headache>
- Harrington BE, Reina MA. *Postdural Puncture Headache*. NYSORA. Published online, Accessed December 13, 2026. [HTTPS://www.nysora.com/topics/complications/postdural-puncture-headache/](https://www.nysora.com/topics/complications/postdural-puncture-headache/)
- Ituk U, Wong CA. *Overview of neuraxial anesthesia*. In: Post TW, ed. UpToDate Inc. Accessed November 26, 2025. <https://www.uptodate.com/contents/overview-of-neuraxial-anesthesia>
- Moore AR, Wiczorek PM, Carvalho JCA. Association Between Post-Dural Puncture Headache after Neuraxial Anesthesia in Childbirth and Intracranial Subdural Hematoma. *JAMA Neurol*. 2020;77(1):65-72. Doi:10.1001/jamaneurol.2019.2995
- Orbach-Zinger S, Ashwal E, Hazan L, Branco D, Ioscovich A, Hirsch L, Khinchuck A, Aviram A, Eidelman LA. Risk factors for unintended dural puncture in obstetric patients: a retrospective cohort study. *Anesth Analg*. 2016; 123(4):972-976. Doi: 10.1213/ANE.0000000000001510
- Riveros P, Sanchez M, Rocuts A, Jimenez E. Use of a triple prophylactic strategy to prevent post-dural puncture headache: an observational study. *Cureus*. 2020 Feb 20; 12(92): e7052. Doi:10.7759/cureus.7052. PMID 32219046; PMCID: PMC7086110.
- Sun Edelstein C, Lay, C. *Spontaneous intracranial hypotension: Pathophysiology, clinical features, and diagnosis*. In: Post TW, ed. UpToDate Inc. Accessed November 26, 2025. <https://www.uptodate.com/contents/spontaneous-intracranial-hypotension-pathophysiology-clinical-features-and-diagnosis>