

External Ventricular Drainage in Intraventricular Hemorrhage

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Definition

External ventricular drainage (EVD) is a core [neurosurgical technique](#) in the acute management of **intraventricular hemorrhage (IVH)**, especially when associated with [hydrocephalus](#) or elevated intracranial pressure (ICP).

□ Purpose

EVD is used to:

- Relieve **obstructive hydrocephalus**
- Control **intracranial pressure**
- Enable **drainage of intraventricular blood**
- Facilitate **intraventricular thrombolysis** (e.g., [rt-PA](#) – investigational)

□ Indications

- Acute **hydrocephalus** due to IVH
- Refractory **elevated ICP**
- Large clot burden obstructing [CSF flow](#)

- Participation in protocols (e.g., [CLEAR III Trial](#))

□ Technical Steps

1. [Position](#) patient [supine](#), head elevated 20–30°
2. Identify **Kocher's point**: 2.5 cm lateral to midline, 1 cm anterior to coronal suture
3. Drill [burr hole](#), open [dura](#)
4. Advance catheter ~5–6 cm toward [foramen of Monroe](#)
5. Confirm **bloody CSF** return
6. Connect to [drainage system](#), level at **10–15 cmH₂O above tragus**
7. [Monitor ICP](#) and drainage
8. *Optional*: instill [thrombolytics](#) (per protocol)

□ Evidence Summary

- The [CLEAR III trial](#) (NEJM 2016):
 1. [Alteplase](#) via EVD reduced clot burden and mortality
 2. No statistically significant improvement in functional outcome (mRS $\leq$ 3)
- EVD alone remains standard for **hydrocephalus relief**, not for clot resolution

⚠ Complications

- [Infection](#) (5–20%)
- Obstruction due to blood clots
- Overdrainage → subdural collections
- Catheter tract hemorrhage

□ Alternatives / Adjuncts

- Endoscopic IVH evacuation (limited to specialized centers)
- Intraventricular [thrombolysis](#) (investigational)
- Lumbar drainage if no obstructive component (not in IVH)

□ Clinical Pearls

- Always monitor **neurologic exam** and **ICP trends**
- Avoid excessive CSF drainage
- Reassess [EVD](#) need daily
- Use **strict sterile technique** for CSF sampling

See also:

- [Hydrocephalus Management](#)
- [Ventriculostomy Technique](#)

Guideline

[External Ventricular Drainage in Intraventricular Hemorrhage Guideline](#)

Letters to the Editor

In a [Letter to the Editor](#) Leite et al. in the **Journal of Neurosurgery** comment on current practices and considerations regarding [external ventricular drainage in intraventricular hemorrhage](#). The authors present their viewpoint on optimal EVD timing, placement technique, cerebrospinal fluid management strategies, and potential complications ¹⁾.

Critical Review

* Strengths:

- Raises important technical and clinical considerations not addressed in existing guidelines.
- Encourages neurosurgeons to think critically about EVD protocols within IVH management.

* Weaknesses:

- No original data or case series—purely anecdotal/opinion-based.
- Lacks explicit descriptions of technique or outcomes that could inform practice.
- Limited generalizability due to absence of evidence backing suggestions.

* Verdict:

- Opinion letters can spark discussion, but without empirical data, this piece remains speculative.
- Useful as a catalyst for more rigorous study, but should not alter clinical practice alone.

Score and Takeaway

* Rating: 4 / 10

- Points awarded for raising procedural nuances; significant deductions for absence of data.

* Key takeaway for practicing neurosurgeons:

- While the authors emphasize several technical considerations, it remains essential to rely on high-quality evidence and institutional protocols when using EVD in IVH. This letter may prompt re-evaluation of local practices, but should not replace data-driven protocols.

Bottom Line

An anecdotal commentary on EVD use in IVH—thought-provoking but unsubstantiated. Use as a discussion starter, not as a guideline.

Citation: Leite PI, Rabello PH, Figueiredo EG. Letter to the Editor: A viewpoint on external ventricular drainage in intraventricular hemorrhage. *J Neurosurg.* 2025 Jul 4;1-2. doi:10.3171/2025.3.JNS25426.

Categories: neurosurgery_letters, ivh_management, csf_diversion **Tags:** intraventricular hemorrhage, external ventricular drainage, EVD technique, opinion piece, commentary

1)

Leite PIF, Rabello PHM, Figueiredo EG. Letter to the Editor. A viewpoint on external ventricular drainage in intraventricular hemorrhage. J Neurosurg. 2025 Jul 4;1-2. doi: 10.3171/2025.3.JNS25426. Epub ahead of print. PMID: 40614284.

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