

□ External Ventricular Drainage Technique

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Step-by-step guide to perform **ventriculostomy** for cerebrospinal fluid drainage in cases of hydrocephalus, intraventricular hemorrhage, or intracranial hypertension.

□ 1. Preparation

- □ Verify **indication** (e.g., IVH, ↑ICP, hydrocephalus)
- □ Review imaging (CT or MRI)
- □ Coagulation parameters: INR < 1.5, platelets > 100k/μL
- □ Consent (if feasible)
- □ Shave and clean frontal region
- □ Prepare sterile EVD kit, manometer/collection system

□ 2. Landmark Identification

- [Kocher's Point](#):
 1. ~11 cm posterior to nasion
 2. 2.5–3 cm lateral to midline
 3. ~1 cm anterior to coronal suture
- Side: typically **non-dominant hemisphere** (unless pathology dictates otherwise)

□ 3. Procedure Steps

1. Position: **Supine**, head elevated 20–30°
2. Anesthesia: Local (± sedation) or general if intubated
3. [Skin incision](#) (1.5–2 cm) at Kocher's point

- 4. Drill burr hole perpendicular to skull
- 5. Open **dura** carefully with monopolar or blade
- 6. Insert catheter **toward contralateral medial canthus**, aiming ~5–6 cm depth
- 7. Confirm **CSF (or bloody CSF)** return
- 8. Advance slightly (~2–3 mm) once CSF flow confirmed
- 9. Tunnel catheter subcutaneously if long-term use
- 10. Suture to scalp securely

4. Drainage System Setup

- Connect catheter to **closed drainage system**
- Level transducer or chamber to **external auditory meatus (EAM)**
- Typical initial height: **+10 to +15 cmH₂O**
- Secure tubing, avoid dependent loops

5. Post-Insertion Care

- Check **CT scan** for catheter position and complications
- Monitor:
 - 1. Drainage volume
 - 2. ICP waveform and trends
 - 3. Neurologic status
- Label system with date/time of insertion
- Keep connections closed; sample only if clinically indicated
- Daily assessment of need for continued drainage

6. Troubleshooting

Issue	Action
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No CSF return	Slight repositioning, flush with saline (if protocolized)
Obstruction	Confirm level, irrigate gently
Overdrainage	Raise system height, check for leak
Infection signs	Culture CSF, consider antibiotic EVD or replacement

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