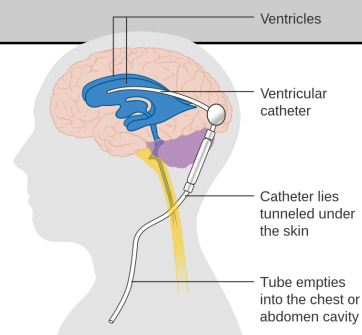


Shunts

The Basics

Shunt-specific history

- What was the indication for shunt placement? [*ie: hydrocephalus placed in childhood, IIH, NPH, post-bleed/injury (SAH, TBI), post-infection*]
- Where does the catheter terminate? [*peritoneum, pleural space, R atrium, gallbladder*]
- When was the shunt placed? [*30-40% of shunts fail within the first year*]
- How many shunt revisions has pt had? When was the most recent one?
- Any history of shunt malfunction or obstruction? What were the symptoms?
- Any history of shunt infection? Which organisms were isolated?
- Is the shunt programmable?



These questions will not only inform NSGY when you call them but will also help determine the degree of urgency. A patient who has had a shunt since childhood with a shunt malfunction will likely be an emergency, whereas someone with IIH with a shunt malfunction can likely be managed outpatient.

Complications

OBTAIN CTH WO CONTRAST and SHUNT SERIES (XR skull, neck, chest, abdomen) → CALL NEUROSURGERY and MAKE PATIENT NPO

Possible signs and symptoms of shunt malfunctions below

Change in mental status (agitation/irritability, somnolence)
 Headache (especially positional)
 Nausea/vomiting
 Increased seizure frequency

Papilledema
 Cranial nerve palsies/ataxia
 Facial swelling

	Pathophys	Specific H&P	Notes
Obstruction	Can occur at proximal catheter, valve, or distal catheter	May have symptoms specific to where catheter terminates	- Most common - Consider abd US or non-con Abd/Pelvis CT if VP for pseudocyst, TTE if VA for clot
Malposition	Inappropriate insertion site or catheter selection	Post-op ICP	- Very early complication
Breakage	Increasing age of shunt, restricted mobility, repetitive trauma	Pain, mild erythema, or swelling of shunt tract at location of fracture	- Late complication - Can occur anywhere along shunt
Migration	Movement of appropriately-placed catheter to position where CSF drainage is compromised	Possible palpable change in position of valve or fluid collection around shunt	- Can occur with significant patient growth
Overshunting	Excessive drainage leading to subnormal ICP, catheter blocked by lying against ependyma and choroid plexus	Severe positional headache	- Can lead to new ventricular collapse (acute "slit ventricle syndrome") and development of SDH d/t tearing of bridging veins
Infection	Intra-op contamination with skin flora, proximal seeding from meningitis, distal seeding from peritonitis/wound infections/endocarditis	Fever, symptoms of peritonitis, endocarditis; may not have meningeal signs d/t lack of connection between meninges and ventricles	- Most common orgs are <i>S. epi</i> , <i>S. aureus</i> , GNRs, <i>Propionibacterium</i> acnes

While initiating this workup for possible shunt malfunction, should also be pursuing workup of other possible etiologies of pt's symptoms (UTI, pancreatitis, etc.).

All above complications most likely require surgical shunt revision with the exception of infection, which also requires IV antibiotics and shunt removal with external drain placement.

