Post-traumatic hydrocephalus

- Establishment and evaluation of a novel rat model of the fourth ventricle hemorrhage
- Unveiling the Possibility of Subclinically Present Congenital Hydrocephalus Triggered by Thalamic Hemorrhage in Late-onset Years: A Case Report
- Optimizing outcomes in intracranial ependymoma: a contemporary review
- An aggressive, unresected pineoblastoma in an adult woman: the role of exclusive radiotherapy - a case report and literature review
- Comprehensive predictive modeling in subarachnoid hemorrhage: integrating radiomics and clinical variables
- Quantification of Zika virus using a colloidal gold nanoparticle-based immunosensor and Fourier-transform infrared spectroscopy
- Lumboperitoneal and ventriculoperitoneal shunting for leptomeningeal disease-associated hydrocephalus: a systematic review and meta-analysis of postoperative outcomes and comparative effectiveness
- Postoperative hydrocephalus in patients with infratentorial brain metastases may be influenced by preoperative treatment: a single-center cohort study

---

Posttraumatic hydrocephalus (PTH) is a complication secondary to traumatic brain injury, especially among patients keeping chronic unconscious.

Epidemiology

see Posttraumatic hydrocephalus epidemiology.

Etiology

see Hydrocephalus after traumatic subarachnoid hemorrhage

see Hydrocephalus after decompressive craniectomy.

Posttraumatic hydrocephalus risk

see Posttraumatic hydrocephalus risk.

Treatment

The median time of shunting was 80 days (range 20-270 days) after brain trauma [1)].

Complications

Postoperative complications were seen in 10 patients (18%): four due to infections and six due to shunt failure. Revision was necessary in all 10 cases. Almost half of the diagnoses of PTH were established in the postacute rehabilitation unit, and all complications after shunt implantation were also recognized there. Precise clinical observation is necessary for diagnosis of PTH. Early diagnosis and treatment are important to prevent secondary complications [2].

Outcome

It can lead to brain metabolic impairment and dysfunction and has a high risk of clinical deterioration and worse outcomes.

On the basis of scores of the functional independence measure, improvement could be observed in 43 cases (78%), the mean score improvement was 40 (2-81) [3].

A proportion of patients who had PTH and remained in severe conscious disturbance would benefit from shunt implantation, and the improvement may turn up late after this procedure [4].

Several recent studies have indicated that high iron levels in brain may relate to hydrocephalus development after intracranial hemorrhage.

Retrospective observational cohort studies

In a retrospective observational cohort study Romualdo et al. from the Department of Neurosurgery Faculty of Medicine, Technische Universität Dresden University Hospital Carl Gustav Carus published in the Neurosurgical Review to identify clinical, radiological, and surgical risk factors associated with the development of shunt-dependent posttraumatic hydrocephalus (PTH) in patients who underwent decompressive craniectomy following severe traumatic brain injury (TBI). Shunt-dependent post-traumatic hydrocephalus (PTH) occurred in 27% of patients after decompressive craniectomy for severe TBI. Independent risk factors included older age, basal cistern subarachnoid hemorrhage, post-traumatic ischemic infarcts, transcalvarial herniation, subdural hygroma, and progressive contusion hemorrhages. Surgical parameters were not predictive. Patients requiring shunt placement had significantly worse neurological outcomes [5].

 The Illusion of Multidimensionality Despite claiming a “multidimensional” analysis, the study delivers a monotonous list of obvious associations—many of which have been reported in the literature for over a decade. Subarachnoid hemorrhage, infarction, hygroma, contusion progression… yes, thank you, we knew that. What’s new? Almost nothing.

 Retrospective, Predictable, and Predictively Useless While the authors apply multivariate statistics, no predictive model or clinical score is produced. The result? A study that identifies risk factors after

the shunt has already been placed — a textbook example of retrospective confirmation bias without translational benefit.

 Surgical Variables: Studied but Ignored The study promises to explore surgical factors, but then dismisses them as statistically insignificant without deeper analysis. Was it the timing? The size of the craniectomy? The bone flap location? None of these variables are interrogated meaningfully. A missed opportunity to challenge surgical dogmas.

⚖ Outcome Data: Obvious and Overstated Shunted patients had worse outcomes? Of course they did. But without adjusting for injury severity, comorbidities, or ICU complications, the conclusion becomes medically tautological — not enlightening.

 Neurological Subtlety? Nowhere to Be Found No cognitive testing. No neuropsychological follow-up. No differentiation between communicating vs. non-communicating hydrocephalus. The brain is treated like a binary sponge: swollen or drained.

 Innovation Score: 2/10

 Decent sample size

 Inclusion of volumetric imaging

 No dynamic monitoring

 No external validation

 No actionable tools for clinicians

 No change in practice likely

 Final Verdict

“A technically competent autopsy of well-known correlations, marketed as innovation. This is not multidimensional analysis — it's dimensional padding.”

Unless you're building a PowerPoint on PTH incidence for a basic residency lecture, this paper offers no clinical leverage, no predictive advantage, and no intellectual disruption. Neurosurgeons looking for guidance will leave empty-handed — again.

Case reports

Prolonged Management of Post-Traumatic Hydrocephalus in a Young Adult with Craniectomy Failure and Multimodal Complications A Case Report

[1)] , [2)] , [3)]
Denes Z, Barsi P, Szel I, Boros E, Fazekas G. Complication during postacute rehabilitation: patients with posttraumatic hydrocephalus. Int J Rehabil Res.2011 Sep;34(3):222-6. doi: 10.1097/MRR.0b013e328346e87d. PubMed PMID: 21555949.
[4)]
Xin H, Yun S, Jun X, Liang W, Ye-Lin C, Xiao-Feng Y. Long-term outcomes after shunt implantation in

patients with posttraumatic hydrocephalus and severe conscious disturbance. J Craniofac Surg. 2014 Jul;25(4):1280-3. doi: 10.1097/SCS.0000000000000583. PubMed PMID: 25006909.
5)

Romualdo SMF, Juratli TA, Eyüpoglu I, Schackert G, Dengl M, Prem M, Hijazi MM, Sitoci-Ficici KH. Post-traumatic hydrocephalus after decompressive craniectomy: a multidimensional analysis of clinical, radiological, and surgical risk factors. Neurosurg Rev. 2025 Jun 21;48(1):523. doi: 10.1007/s10143-025-03673-0. PMID: 40542880.