Posterior fossa decompression for Chiari malformation complications

- A comparison of prone versus sitting position for the surgical treatment of Chiari malformation type I in children
- Resolution of tension pseudomeningocele complicating foramen magnum decompression for Chiari I malformation after ventriculoperitoneal shunt: A case report
- Rehabilitation in a child with Chiari II malformation, lumbosacral meningomyelocele, achondroplasia and impaired respiratory regulation - a case report and literature review
- Syringohydromyelia, syringobulbia and syringocephaly associated with Chiari - I malformation: A case report
- Clinical outcome of different surgical approaches for symptomatic Chiari malformation without syringomyelia: a 13-year retrospective study
- Difference in clinical presentation and surgical outcomes in pediatric and adult patients with Chiari malformation type 1: a single center retrospective study
- Posterior Fossa Decompression Followed by Duraplasty with Arachnoid-Preserving Technique for Primary and Recurrent Adult Chiari Malformation Type-1.5: A Comparative Retrospective Study
- Can posterior fossa decompression alone effectively treat Chiari malformation type I patients with even severe syringes? Illustrative cases

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After suboccipital craniectomy plus C1–3 cervical laminectomy in 71 patients, with dural graft in 69, one death due to sleep apnea occurred 36 hrs post-op. Respiratory depression was the most common post-op complication (in 10 patients), usually within 5 days, mostly at night. Close respiratory monitoring is therefore recommended [1]. Other risks of the procedure include: Cerebrospinal fluid fistula, herniation of cerebellar hemispheres, vascular injuries (to PICA…).

Systematic review of observational studies reveals higher reoperation rates after bony decompression alone, but clinical improvement was not higher after primary decompression with duraplasty. There are so far no high-quality studies that offer guidance in the choice of decompressive technique in adult CM1 patients [2].

Posterior fossa decompression for Chiari type 1 deformity is carried out to improve passage of cerebrospinal fluid (CSF) in patients with symptomatic Chiari I malformations (CM1), but the extent and means of decompression remains controversial. Dural opening with subsequent duraplasty may contribute to clinical outcome, but may also increase complication risk.

Hydrocephalus

see Hydrocephalus after posterior fossa decompression for Chiari type 1 deformity.

Suboccipital Pseudomeningocele

see Suboccipital pseudomeningocele after posterior fossa decompression for Chiari type 1 deformity.

A report describes the circumstances of a patient with a cauda equina syndrome due to the development of a lumbar spinal subdural hygroma with ventral displacement of the cauda equina shortly following posterior fossa decompression for Chiari type 1 deformity (CM-I). This unusual, but clinically significant, complication was successfully treated with percutaneous drainage of the extraarachnoid CSF collection. Although there are a few cases of intracranial subdural hygroma developing after surgery for CM-I, often attributed to a pinhole opening in the arachnoid, as far as the authors can determine, a spinal subdural hygroma associated with surgery for CM-I has not been recognized [3].

Bulbar edema

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1)
Paul KS, Lye RH, Strang FA, et al. Arnold-Chiari Malformation: Review of 71 Cases. J Neurosurg. 1983; 58:183–187
2)
Förander P, Sjåvik K, Solheim O, Riphagen I, Gulati S, Salvesen O, Jakola AS. The case for duraplasty in adults undergoing posterior fossa decompression for Chiari I malformation: A systematic review and meta-analysis of observational studies. Clin Neurol Neurosurg. 2014 Jul 21;125C:58-64. doi: 10.1016/j.clineuro.2014.07.019. [Epub ahead of print] Review. PubMed PMID: 25087160.
3)
Darwish HA, Oldfield EH. Lumbar subdural cerebrospinal fluid collection with acute cauda equina syndrome after posterior fossa decompression for Chiari malformation Type I: case report. J Neurosurg Spine. 2016 Sep;25(3):328-31. doi: 10.3171/2016.2.SPINE151480. Epub 2016 Apr 15. PubMed PMID: 27081710.