

Hydrocephalus Develops After Chiari Surgery 5% of the Time

A recent study of over 500 Chiari surgeries at multiple centers found that slightly over 5% of the patients developed hydrocephalus after decompression surgery. Hydrocephalus is when there is excess cerebrospinal fluid (CSF) in the brain, which often requires the placement of a shunt for treatment. This study involved six surgical centers in New York, Washington DC, Tennessee, Cincinnati, Berlin, and Tel Aviv. There were 549 consecutive surgical Chiari cases, mostly pediatric but with some adults, who underwent a variety of surgical techniques, including some bone only decompressions. The average time between surgery and identification of hydrocephalus related symptoms was 2.2 months, with headaches and vomiting being the most common. It should be noted that the authors included late onset CSF leaks and pseudomeningoceles as indicators of hydrocephalus. In all, 28 patients (5.2%) developed this serious complication. The rates at the individual centers ranged from 1.2% to over 9%. On follow-up MRI, 20 of the 28 hydrocephalus cases showed a significant increase in their ventricle size (ventricles are CSF filled spaces in the brain). In terms of treatment, the vast majority (82%) required permanent shunting, but some cases did respond to temporary CSF diversion and even medication. Hydrocephalus is well known as a related condition to Chiari at time of diagnosis, but it's onset after decompression surgery is not talked about enough. Besides being a serious complication that very often requires a permanent shunt to treat, how it occurs is not at all clear. Chiari symptoms are often talked about arising from direct compression of brain tissue and disruption of the flow of CSF; however hydrocephalus is thought to result due to an imbalance in the production and absorption of CSF. What is it about surgery that might disrupt this balance, especially given that 3 of the patients who developed hydrocephalus in this study had bone only decompressions – meaning the CSF space was not opened? Is it possible that Chiari has more of an impact on the production/absorption cycle of CSF than is currently believed? It will take a lot more research to answer this question, but for now patients should be aware that developing hydrocephalus after decompression surgery is a risk.

Source: Treatment Options for Hydrocephalus Following Foramen Magnum Decompression for Chiari I Malformation: A Multicenter Study. Bartoli A, Soleman J, Berger A, Wisoff JH, Hidalgo ET, Mangano FT, Keating RF, Thomale UW, Boop F, Roth J, Constantini S. Neurosurgery. 2019 Jun 24.