

Surgery Reduces Syrinx Size 88% Of The Time

When enough studies have been published on a specific topic, it becomes possible to combine the results of the different studies using statistical techniques in what is called a meta-analysis. The meta-analysis is at the top of the research methodological pyramid in terms of quality of evidence that it produces and there are well established guidelines for how to perform them. In the Chiari world, meta-analyses have been conducted on a number of topics, including surgical outcomes with and without opening the dura, the prevalence and treatment of typical and atypical headaches, and using imaging parameters to predict surgical outcomes.

Now, a group from Scotland has added to the growing list of Chiari focused meta-analyses by looking at the radiological response of syrinxes to decompression surgery. Specifically, they searched the published literature for English language studies that involved Chiari patients with syringomyelia (any age), quantitatively reported the syrinx size both pre- and post-surgery, and included at least 5 subjects. Using these parameters, they identified 20 such studies which included over 3,000 patients overall. Sixteen of the twenty included studies were rated as high quality methodologically.

By combining the results of the studies, they found that posterior fossa decompression with duraplasty (opening the dura) on average reduced syrinx width by 2.5mm, and the length by 1.7 vertebral segments. In addition, this type of surgery resulted in syrinx reduction or resolution 88% of the time.

Unfortunately with syrinxes, a reduction on imaging does not always equate to an improvement in symptoms for the patients, but it is an important indicator that the disruption that caused the syrinx in the first place has been fixed. Interestingly, the authors also found in a limited number of studies that decompression surgery that included reduction of the cerebellar tonsils resulted in better clinical outcomes as measured by the Chicago Chiari Outcome Scale (CCOS). However, they stress that the limited number of people included in this part of the analysis means the result should be considered preliminary and requires further study and validation.

While many surgeons consider the presence of syrinx as a clear indicator for the need for surgery, the authors point out that the studies included in their analysis did not include outcome comparisons between surgical and conservative treatments, and again further research is required to compare the two approaches.

It is encouraging to see a growing number of Chiari centered meta-analyses as these types of studies can produce reliable, quantifiable results which patients and their doctors can use in making decisions about their treatment plan.

Source: Prasad AS, Azmil Farid AFB, Wen ITJ, Zhang T, Kaliaperumal C. Efficacy of neurosurgical intervention in syrinx resolution in patients presenting with Chiari malformation type I and syringomyelia: a systematic review and radiological meta-analysis. *Neurosurg Rev.* 2025;48(1):724. Published 2025 Oct 20. doi:10.1007/s10143-025-03864-9

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