# Research Update | February, 2020

CONQUER CHIARI
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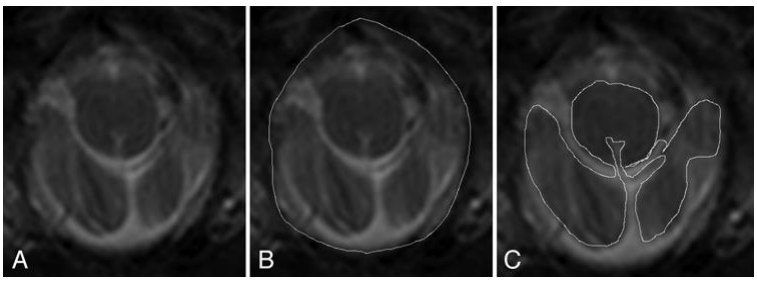
## CSF Restriction Linked to Syringomyelia

Over the years (decades really) there have been many theories as to how and why syrinxes form as a result of Chiari, but all of them have weaknesses and none seem to fully answer the question. While a recent publication in the Journal of Neurosurgery did not address syrinx formation at a fundamental level, it may have added another piece to the complicated puzzle. In a small study a group of doctors from the University of Virginia Health System showed that Chiari patients with syrinxes had less room in the subarachnoid space (SAS) for cerebrospinal fluid (CSF) to flow than Chiari patient without syrinxes. Their study population consisted of 68 patients, 26 of whom had a syrinx. To perform the analysis they used axial MRI to determine what percent of the SAS area was not tissue (and thus available for CSF flow) at the level of the foramen magnum, and that the level with the most restriction (usually around the top of the first vertebra):




When they matched the syrinx and non-syrinx groups by age, tonsillar position, they found the syrinx group on average had significantly less space, 12% vs 19% at the level of the foramen magnum. Disturbingly, at the tightest point, the syrinx group had only 5% of the space available for CSF flow. In a strong demonstration of the effects of decompression surgery, this space increased to an average of 30% for the syrinx group at the tightest point and 38% at the foramen magnum. The authors also noted that patients whose syrinxes resolved had a larger increase in available space after surgery than those whose syrinxes did not resolve. It would be interesting to expand this analysis to hundreds of patients to see if there is a specific amount of CSF restriction that causes a syrinx to form and if the position of that restriction plays a role.

**Source:** Taylor DG, Chatrath A, Mastorakos P, et al. Cerebrospinal fluid area and syringogenesis in Chiari malformation type I [published online ahead of print, 2020 Feb 21]. J Neurosurg. 2020;1–6.

*Conquer Chiari's research updates highlight and summarize interesting publications from the medical literature while providing background and context. The summaries do contain some medical terminology and assume a general understanding of Chiari. Introductory information and many more research articles can be found in the Conquer Chiari Library.*