

### Key Points

1. Decompression surgery fails in up to 20%-30% of cases
2. Authors report that out of 130 pediatric surgeries (75 with SM), 8 continued to have a syrinx 1-3 years after surgery
3. Researchers reviewed charts and MRI's for specific features to predict surgical failure
4. Study did not find any measurement that could predict surgical failure
5. 7 of 8 syrinxes resolved after a second surgery
6. 6 of 8 patients were found to have some type of CSF obstruction out of the 4th ventricle upon reoperation

### Definitions

**cerebellar tonsils** - portion of the cerebellum located at the bottom, so named because of their shape

**cerebellum** - part of the brain located at the bottom of the skull, near the opening to the spinal area; important for muscle control, movement, and balance

**cerebrospinal fluid (CSF)** - clear liquid in the brain and spinal cord, acts as a shock absorber

**Chiari malformation (CM)** - condition where the cerebellar tonsils are displaced out of the skull area into the spinal area, causing compression of brain tissue and disruption of CSF flow

**dura** - thick outer covering of the brain and spinal cord; beneath the dura are the arachnoid and the pia

**duraplasty** - surgical technique where a patch is sewn into the dura

**magnetic resonance imaging (MRI)** - diagnostic device which uses a strong magnetic field to create images of the body's internal parts

**posterior fossa** - depression on the inside of the back of the skull, near the base, where the

### Trying To Understand Why Some Syrinxes Don't Go Away

The relatively high failure rate of decompression surgery - up to 30% - has been well documented (see Related Articles), and given that more than 3,000 decompressions are performed annually in the US, researchers are anxious to find some method of predicting who will have a successful surgery and who might not. Unfortunately, they have so far failed in this effort, and to date there is no single objective measure that can be used to say who will benefit from surgery and by how much.

Some authors have pointed out that surgeries may fail for a number of reasons: complex anatomy, inadequate decompression, bony regrowth, and co-existing conditions (such as intracranial hypertension) to name a few; but despite their best efforts, no one has so far been able to really pinpoint anything, such as an MRI feature, which can effectively be used beforehand.

Now, in a report published in the May, 2004 issue of the Journal of Neurosurgery: Pediatrics, the now familiar team from the University of Alabama at Birmingham, led by Dr. Tubbs and Dr. Oakes, reveal they also came up empty in trying to identify a single, simple reason why surgery did not result in syrinx resolution for a subset of their patients.

Out of 130 pediatric decompressions performed by Dr. Oakes over the years, 75 had both Chiari and syringomyelia. Of these 75, eight (10.6%) continued to have a syrinx 1-3 years after surgery. In an attempt to find that elusive predictor of surgical success, the doctors reviewed the medical charts and MRI's of these cases and compared them with the patients whose syrinxes collapsed after surgery. It should be noted that all the patients underwent a similar procedure, which included a craniectomy, C1 laminectomy, duraplasty, and exploration of the 4th ventricle (to ensure CSF outflow).

Specifically, they reviewed the charts for indications of difficulties with the procedure, unusual anatomy, or the need to use a stent during the surgery. The images were quantitatively analyzed for the amount of tonsillar herniation, dimensions of the foramen magnum, whether the brainstem was displaced, and other anatomic features which may have impacted surgical outcome.

Unfortunately, they were unable to find a single radiographic measurement which could be used to predict for which patients surgery might fail. In general, the anatomical features of the eight were similar to the patients for whom surgery was successful. In addition, there was nothing in the operative reports which could be used in assessing future patients.

The good news is that 7 of the 8 patients experienced complete resolution of their syrinxes after a second surgery. One patient continues to suffer from a syrinx and will probably undergo a third surgery, and possibly a shunt placement. During the second surgery, the doctors noted that 6 of the 8 patients had some type of obstruction blocking the CSF flow out of the 4th ventricle and stress the importance of ensuring good flow during surgery.

While for the majority of Chiari and syringomyelia patients, 70%-80%, surgery will be straightforward and successful, there continues to be a large subset of patients for whom initial surgery will fail. Apparently, this can be for any of a number of reasons, and for now at least, there appears to be no good way to know ahead of time which group a person falls into.

### Related Articles:

- [Duration Of Symptoms Before Surgery Influences Outcome](#)
- [Large Study Examines Surgical Outcomes In Children](#)
- [Does The Shape Of A Syrinx Predict Post-surgical Improvement?](#)
- [Trying to identify why surgeries fail.](#)
- [Treatment options after failed surgery.](#)
- [Looking for predictors of surgical success.](#)

cerebellum is normally situated

**stent** - tube used to support an opening in the body

**syringomyelia (SM)** - neurological condition where a fluid filled cyst forms in the spinal cord

**syrinx** - fluid filled cyst in the spinal cord

**ventricle** - a space in the brain where CSF collects

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