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Decompression Surgery Improves Scoliosis in Children Half the Time

Scoliosis, an abnormal curvature of the spine, affects up to one third of children with Chiari, with higher rates among children who also have syringomyelia. If the Chiari symptoms are significant, or if there is a syrinx, surgeons will often recommend decompression surgery as the first treatment with the hope that in addition to relieving the Chiari symptoms it will stabilize or even improve the scoliosis and eliminate the need for spinal fusion.

In a systematic review and meta-analysis, a group from Europe has found that this approach is effective about half the time. The group scanned the research for English language studies that involved Chiari patients under the age of 18 with scoliosis who had undergone decompression surgery as the first treatment. They also restricted their analysis to studies that reported on at least 10 patients. With these criteria they identified 11 studies that represented 380 pediatric Chiari patients. The combined average age of the patients was 10 years and 59% were female. Ninety-three percent had syringomyelia and the average angle of the major scoliosis curve was 37°.

When the researchers combined the results from the different studies, they found that decompression surgery resulted in improvement in the scoliosis curve in 48% of the patients and stabilization in another 9%. Unfortunately, the scoliosis kept progressing in 43% of the patients and most of those children eventually required some type of spinal fusion surgery. Interestingly the decompression surgery was successful in improving or resolving the patients' syringomyelia in 94% of the cases.

The researchers then used a sophisticated statistical technique to identify factors that were associated with the success/failure of decompression surgery in addressing the scoliosis. They found that older children had less successful outcomes than younger children, with every year of age difference reducing the odds of success by 24%. They also found that children with larger initial curve angles did not do as well, with every 5° of curve lowering the odds of success by 21%.

The link between Chiari, syringomyelia, and scoliosis is not well understood but at least this analysis provides parents with some concrete evidence on the potential effectiveness of decompression surgery in improving associated scoliosis.

Sources: Palombi D, Brigato P, Benato A, et al. Scoliosis associated with Chiari I malformation after posterior fossa decompression: a systematic review and meta-analysis of 380 pediatric patients. *Spine Deform*. Published online December 11, 2025. doi:10.1007/s43390-025-01252-3

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