

## Tonsillar Manipulation During Surgery

Twenty years ago, when Conquer Chiari first started publishing research updates, the idea of removing part of the cerebellar tonsils during decompression surgery was highly controversial. Similarly, the idea of not opening the dura and only removing bone was just beginning to be explored. As evidenced by a recent study out of China, a lot has changed since then.

The Chinese study involved 14 hospitals and over 800 adult, surgical Chiari patients. Each hospital was instructed to collect the same data and follow the same diagnostic and surgical procedures over a 5-year period. The main outcome measures were the Chicago Chiari Outcome Score (CCOS) and the Japanese Orthopedic Association score (JOA). It is important to note that the selection of the surgical techniques were not randomly assigned but were determined by the individual surgeons in consultation with the patients. The techniques were grouped as bone-only decompression, decompression with duraplasty, decompression with duraplasty and tonsillar manipulation, and a catch-all group of other procedures.

The average age of the patients was 45 years and there more women (67%) than men (although the difference was not as extreme as is seen in the US) and 92% had syringomyelia. Interestingly, 40% of the patients had been misdiagnosed and those who had been misdiagnosed had a longer symptom duration before surgery. Overall, 71% of the patients had improved CCOS/JOA scores after surgery, while 7% had worse scores. Those who underwent tonsillar manipulation had the highest post-operative JOA scores on average but they were not much different than the typical duraplasty procedure. Also, the complication rate among tonsillar manipulation group was higher than the other groups. When the researchers analyzed predictors of outcome (as defined by CCOS score) they identified procedure type, disease duration, and additional cranio-vertebral issues as playing a significant role. The Chiari1000 also identified duration before diagnosis as a significant factor in outcome, with those going 2 or more years before diagnosis experiencing significantly worse outcomes.

At about the same time as the Chinese study, a different group from Brazil published a meta-analysis comparing decompression with tonsillar manipulation to decompression with just duraplasty. Their review identified 10 studies involving over 1500 patients and found that surgery with tonsillar manipulation resulted in significantly higher CCOS scores than duraplasty alone. In addition, patients who underwent tonsillar manipulation were twice as likely to have an overall improvement than patients who didn't. However, tonsillar manipulation almost doubled the odds of meningitis as a complication.

In the past 6 months, there has been a slew of Chiari related meta-analyses and large studies like the Chinese one. After going years without having the data necessary for patients to make informed decisions, it appears that Chiari may be turning a corner in this regard. Let's hope that the flow of data continues into 2026 and beyond.

**Sources:** Wang F, Wei M, Xu D, et al. Cohort analysis of surgically managed Chiari malformation type 1: real-world data from multi-centres. *Neurosurg Rev.* 2025;49(1):55. Published 2025 Dec 9. doi:10.1007/s10143-025-03987-z

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