



# Arachnoiditis and Chiari I malformation

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A Chiari malformation is one of those conditions which continue to fascinate and perplex modern neurosurgeons and where a range of controversies continue for several decades. Debate continues even on the name of the condition and when it was first described, on its pathophysiology and on several aspects of surgical technique [1].

One such point of uncertainty is the role of arachnoiditis in Chiari I malformation. Is it a primary or secondary phenomenon? Or both? Evidence from colleagues with a long standing and demonstrable interest in this condition comes to shed some light on this. Both histological and intraoperative assessments of the arachnoid are reported in a series of 162 consecutive patients spanning the period of a decade (2006–2016) [2].

Klekamp and colleagues found that the arachnoid was thicker in adults than children and in secondary than primary decompressions. They also report, importantly, that histological classification correlated with preoperative symptoms, such as ataxia and motor or sensory deficit, as well as with postoperative outcomes both in the short and long term. These are significant results and do put on the map a histological-clinical correlation in the pathophysiology of this condition [2].

There are some important learning points worth mentioning. In a rare disease, where a randomised clinical trial has often been described as impractical, the approach of the reporting team has been methodical.

- They started an institutional database, with prospective collection, for all such cases in 1991.
- They have been since then recording their intraoperative observations of the arachnoid and its relationship with surrounding tissue.

- And the clinical outcomes both preoperatively and postoperatively, at all points of contact in the follow-up period.
- Their surgical technique has remained largely consistent during this period.

This has enabled the long-term observation for ‘progression-free survival’, and though there is no control arm in their study, they report important observational data.

An association between arachnoiditis and Chiari malformation is not new. Reports exist of an acquired Chiari I even after distal tuberculous arachnoiditis in the lumbar spine, for example [5]. The conundrum of primary arachnoiditis, however, and its role in Chiari malformation remain unclear; the reported results are interesting [2]. The association between arachnoiditis and syringomyelia is equally well recognised, though poorly understood, and the current authors do discuss this association in their series [2–4].

Some believe that an arachnoid sparing decompression can minimise the risk of arachnoiditis, as opposed to arachnoid opening and shrinking of the tonsils [6, 7]. This current series will not settle that debate or any debate on how foramen magnum decompression might best be performed, but the authors provide long-term results with progression-free rates exceeding 95% after 5 and 10 years for their technique, which has remained consistent. This provides a benchmark against which proponents of other techniques might wish to compare.

## Compliance with ethical standards

**Conflict of interest** The author declares that he has no conflict of interest.

This article is part of the Topical Collection on *Neurosurgery general*

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