

Minimally Invasive Decompressions #2 --- Dr. Bolognese January 8, 2008

These kind of surgeries are currently being pushed by a number of pediatric neurosurgeons, who are concerned about the incidence of complications from the standard CMI decompression surgery; their main fear is the CSF leakage;

CSF leakages occur more often with less experienced surgeons, and this is the MAIN parameter to keep in mind. When one specific surgeon is picked, his chances of CSF leakage will increase as he opens the skull, then the dura, then the arachnoid (which is the last water-proof barrier holding the CSF. Opening the skull alone like in the minimally invasive surgeries does not have a zero risk of CSF leakage, because of an anatomical trap called "cranial lacunae";

To give an idea how much the surgeon (and not the specific kind of surgery) is the major determinant for CSF leakage, read the following stats:

- most of the top national CMI experts average an 8% incidence of CSF leakage, when the dura is open
- less expert neurosurgeons can have an incidence of CSF leakage ranging from 20 to 45%, with the same kind of surgery (= opening the dura)
- the chance to have a CSF leakage with a minimally invasive procedure is around 1-2%;
- the incidence of CSF leakage at TCI (where not only we open the dura, but the arachnoid as well, and where we have a high awareness about potential cranial lacunae) is only 0.3%

Minimally invasive surgeries tend also to be minimally effective.

The reality is that these surgeries work well only when the following criteria are met:

- the posterior fossa is small, but not very small;
- the tonsillar herniation is minimal
- the tonsils are not compressing the brainstem, as mass

Occupying lesions

- the tonsils are not laterally herniated
- a large syrinx is not present
- brainstem symptoms are minimal or absent;

Bottom line: minimally invasive decompressions work well only with minimal forms of Chiari I. With other forms of Chiari, they tend to provide incomplete and often short-lived clinical improvements;

How do we know that?

Because 49% of the patients operated on at TCI had former surgeries done elsewhere, with suboptimal results, a big chunk of these patients had different versions of minimally invasive decompressions done in the past

The advantage of these surgeries is that it allows less experienced surgeons to take a swing at the CMI without high risks of complications

but none of the top 10 CMI experts in the Country would use these surgeries as their weapon of choice. The other advantage is that any form of minimal CMI decompression is better than no decompression at all.