



Abstract #452

Evaluation of the effectiveness of surgical treatment
and urological outcomes of fixed spinal cord syndrome in spina bifida.
A systematic review.

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Hypothesis / aims of study

Development of the tethered spinal cord syndrome of secondary genesis may be due to the consequences and complications occurred by surgical treatment in the fetal and neonatal periods of spina bifida aperta. Currently, a wide range of criteria and indications for surgical spinal myelodysplasia (SM) retethering are well described, as well as a range of technologies and options for surgical treatment of STSC in spina bifida.

The use of additional diagnostic tools allows to defy the need both to prevent the "symptomatic stage" of secondary spinal cord fixation syndrome and motivates the authors and other researchers for further study and evaluation of each and every result and minimal clinical efficacy criteria. We present this review as the first stage for the systematic analysis of the neurosurgical treatment and "symptomatic" criteria and SM retethering efficiency in SB patients.

Results and interpretation

23 articles published between 2009 and 1023 have met the eligibility criteria. 17 publications were pragmatic studies by design and 5 were randomized trials. Mean level of evidence was III. Currently there was no universal and validated score, which would allow to assess neurologic, urodynamic and orthopedic outcomes of detethering surgery. Functional assessment by the use of tractography was seen in 19 out of 23 articles. That indicates the emerging consensus among the experts.

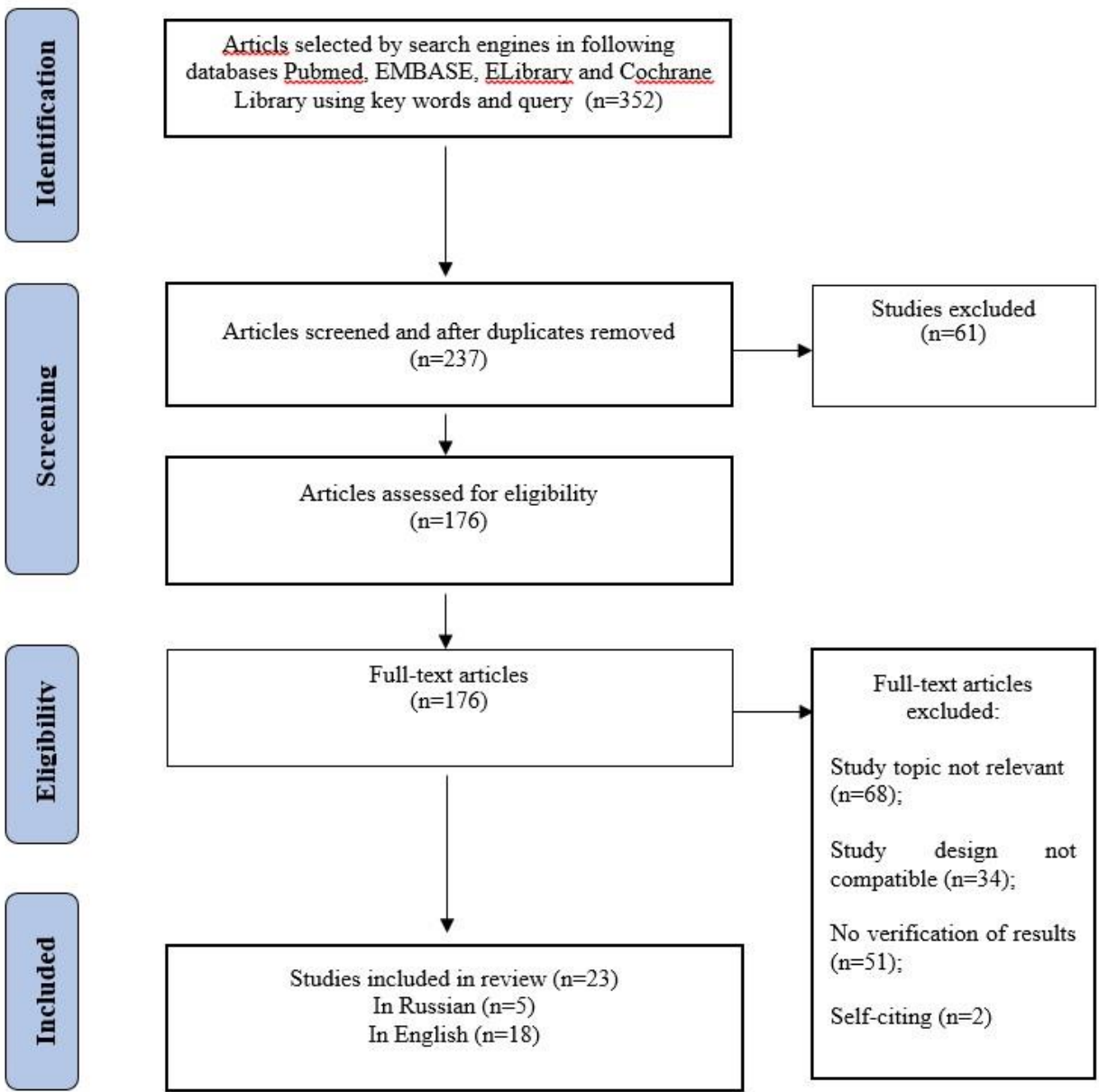
Currently there is a consensus among the experts regarding clinical and neuro visualization criteria of tethered cord syndrome. Despite that, the question of surgical effectiveness directly depends on methods of clinical evaluation used to assess severity of functional deficit (that includes voiding function) and to what degree morphofunctional alterations to neural tissue are reversible. Despite the abundance of clinical scores and questionnaires currently there is no universally implemented system for standardized evaluation of neurologic, urologic and orthopedic deficits in patients with tethered cord syndrome.

Score or criteria	Number of publications, where the score/criteria is mentioned	Percentage from selected publications (n=23)
(Modified) Ashworth scale	21	95,4%
Tardieu scale	21	95,4%
Spina bifida Neurological Scale (SBNS)	9	40,9%
Modified JOA score (mJOA)	10	45,4%
Electroneuromyography (ENMG)	22	100%
Fractional anisotropy (FA)	8	54,5%

Tab 1: Main scores for tethered cord syndrome surgical treatment efficacy evaluation, that were analyzed in selected publications

Study design, materials and methods

The search for prospective cohort clinical studies was carried out in the Pubmed, EMBASE, eLibrary and the Library databases, published in the period from 2005 - August 2022, evaluating the methods of the fixed spinal cord syndrome correction in Spina bifida. Two researchers carried out the search for literature data. The study was carried out in accordance with the international guidelines for writing systematic reviews and meta - analyses of PRISMA



Conclusions

There are conflicting opinions and statistically unreliable differences in the frequency of complications after surgical treatment in the literature. Currently, despite the abundance of surgical methods for the treatment of spina bifida, none of them can reliably prevent spinal cord fixation syndrome, which explains the urgency of the problem and the need for further research.

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