## **Miethke M.blue**

- First insights into the utilisation of the M.BLUE() device for post-haemorrhagic hydrocephalus treatment
- Three-Dimensional Visualization of Shunt Valves with Photon Counting CT and Comparison to Traditional X-ray in a Simple Phantom Model
- Initial Clinical Experience and Biomechanical Analysis of a Novel Gravity Unit-Assisted Valve (M.blue) in Pediatric Patients With Hydrocephalus: A Retrospective Study With Two Years of Follow-up
- First experiences with Miethke M.blue valve in iNPH patients

https://www.miethke.com/en/products/adjustable-valves/mblue

The Miethke M.blue valve is a medical device used to treat hydrocephalus, a condition where there is an excessive accumulation of cerebrospinal fluid (CSF) in the brain. The valve is implanted in the patient's brain and helps regulate the flow of CSF from the brain to the rest of the body.

The Miethke M.blue valve is a programmable valve, which means that it can be adjusted to control the rate at which CSF flows out of the brain. It is designed to provide stable and controlled drainage of CSF, which can help relieve symptoms associated with hydrocephalus, such as headaches, nausea, and cognitive impairment.

Overall, the Miethke M.blue valve is considered a safe and effective treatment option for hydrocephalus, and it is used by many neurosurgeons around the world. However, as with any medical device, there are risks associated with its use, and patients should discuss the potential benefits and risks with their doctors before undergoing any surgical procedure.

21 probable Idiopathic normal pressure hydrocephalus patients were indicated to shunt surgery with the Miethke M.blue® adjustable gravitational valve. Outcomes at three months were measured using the following tests: Dutch Gait Scale, International Consortium on Incontinence Questionnaire (ICIQ-UI SF), SF12V2-Health Survey, Kiefer Scale, 3T MRI, and a neuropsychological testing battery. Preoperative parameters were studied for any signs of over-drainage risk. Valves were set according to the manufacturer's recommendations. Significant improvement at three months was seen in the Dutch Gait Scale, ICIQ-UI SF, Kiefer Scale, Mental Health Component of the SF12V2-Health Survey



(MCS-12), and three neuropsychological tests: Rey-Osterrieth complex figure test (ROCFT 30 min), auditory verbal learning test (AVLT I-V) and the NKP version of verbal fluency test. Seven patients needed more than one adjustment of the valve. This subgroup significantly improved only in Walking Score and Step Score but the trend was toward significant improvement in other variables. Eight patients had subdural effusions that were completely managed with adjustments until the 3-month control. BMI was significantly lower in patients with  $\geq$ 2 adjustments compared to those with a maximum of one adjustment. Implantation had low complication rates and no mortality. Initial results are promising however more studies are needed to provide a rationale for gravitational valves in iNPH. Skalický et al. recommend increasing the initial valve setting by 2-4 cm H2O above the manufacturer's recommendation, especially in lean patients<sup>1)</sup>.

The literature on hydrocephalus treatment shows support for adjustable valves and devices which prevent the so-called "siphon effect".

## Miethke M.blue for pediatric hydrocephalus

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1)

Skalický P, Mládek A, Vlasák A, Whitley H, Bradáč O. First experiences with Miethke M.blue® valve in iNPH patients. J Clin Neurosci. 2022 Feb 15;98:127-132. doi: 10.1016/j.jocn.2022.02.004. Epub ahead of print. PMID: 35180501.

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