

Oral presentation

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Shunting of hydrocephalus with the new adjustable gravitational proGAV – advantages compared to other devices

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Background

The new proGAV represents the combination of a new adjustable differential-pressure unit in series with a gravitational device. By its construction principle the proGAV should be capable to avoid the main disadvantages of other so-called "programmable" valves: The burden of the necessity for repeated X-ray-controls, the sensitivity to irregular adjustments in MR, the ongoing danger to over-drain of other adjustable differential-pressure-valves and the high probability of obstruction in adjustable valves with Anti-Siphon-Units.

Materials and methods

From February 2004 we conducted a series of shunting 32 adult patients with different etiologies. In all cases the proGAV was implanted in ventriculo-peritoneal drainages with frontal boreholes. Primarily we were interested in the security to determine the adjusted opening pressures by avoiding the burden of continuous repeated X-ray-controls, in the capability to adjust the valve transcutaneously safely and in the ability to avoid irregular adjustments, for instance by MR-studies, by its "brake". We focused secondarily on the radiological and clinical results and the possibilities for improvement by readjustments.

Results

After a follow-up of at least 3 months the clinical and radiological results of our small series give evidence for the reliability of the proGAV to avoid most of the disadvantages of other hydrostatic and/or adjustable devices. In 8 patients we saw an indication to change the opening-pressure. In 6 cases we lowered the opening pressure because we suspected functional underdrainage, but was followed by unequivocal improvement in only 3 patients. In 2 cases

narrow hygromas developing postoperatively resolved after increasing the opening pressure. 2 patients succumbed due to complications not related to the valve. Thus the final clinical outcome proved excellent and good according to the Black-outcome-scale in 82%. The radiological and clinical final outcome of our little series up to now seems to prove the ability of the new construction principle to achieve change of pressure-settings and its control easily and with safety avoiding the necessity of surgical exchange of the valve. Not one case of unintended adjustment has to be registered in all the controls, but only 2 patients have been exposed to MR up to now.

Conclusion

The series is too small and the outcome represents only preliminary results, thus a comparison to series with other adjustable valves is obsolete up to now. But the new theoretical concept and the first clinical results give evidence of the proGAV to be superior to other devices and may inaugurate a new era of shunting hydrocephalus.