

Paper 2

Title: A new technology for adjustability and MR-resistance of shunt-valves – Experience after implantation of 54 proGAVs

Authors: Christian Sprung, Hannah Glocker, Hans-Georg Schlosser

Background: The new proGAV represents the combination of a new adjustable differential-pressure unit including a “brake” 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 and the ongoing danger to over drain of adjustable differential-pressure-valves.

Material and Methods: Since February 2004 to September 2005 we conducted a series of 54 patients (with one exception adults) suffering from hydrocephalus of different etiologies implanting a proGAV-shunt. As first step we were interested in the security of the new tools to determine the opening pressures avoiding X-rays, in the capability to adjust the valve epicutaneously safely and in the ability to avoid irregular maladjustments. We focused then on reasons to change the opening pressure or complications and the clinical results including the possibilities for improvement by readjustments.

Results: The outcome with 12 excellent and 15 good results among the 34 patients without the necessity of readjustments give evidence for the reliability of the proGAV to avoid most of the disadvantages of other adjustable devices. In 16 cases we saw an indication to lower the opening pressure because we suspected functional under drainage; 12 patients improved more clinically than radiologically. Out of 4 patients with over drainage 1 case of slit-ventricles revealed significant improvement and 3 hygromas resolved after increasing the opening pressure. The outcome of our series proves the ability of the new construction to avoid surgical exchange of the valve in at least 10 cases, but on the other hand you should refrain from the tendency to use adjustability only because the possibility is there. No spontaneous readjustments have been seen up to now.

Conclusions: The new theoretical concept and the first clinical and radiological results give evidence of the proGAV to be superior to other adjustable devices at least in adults. The series is still small and the follow-up relatively short, thus the comparison of our cohort to series with other adjustable valves remains preliminarily up to now.

Full name, mailing address, phone/fax number and e-mail address of presenting author:

Christian Sprung

Neurosurgical Department, Charité, Campus Virchow-Klinikum, Universitätsmedizin, Augustenburger Platz 1 13353 Berlin, Germany

tel: 004930450660183 fax:004930450560900

e-mail: Christian.sprung@charite.de