

Sophy SU8 adjustable valve

Twelve patients with hydrocephalus were shunted using the Sophy programmable pressure valve (SU-8). Positional shunt flow and intraventricular pressure (IVP) were measured. An anti-siphon device (ASD) was inserted primarily in seven patients. Two of the five patients without an ASD developed subdural hematoma (SDH) and one developed slit ventricle syndrome (SVS). Upgrading the valve resistance failed to control SDH and SVS and required the addition of an ASD to control overdrainage.

In the sitting position, shunt flow was maximal in the low-pressure valve without an ASD (group A1: 1164 ml/day) and least in the medium- and high-pressure valves with an ASD (group B2: 48 ml/day). Intermediate values were found in the medium- and high-pressure valves without an ASD (group A2: 528 ml/day) and in the low-pressure valve with an ASD (group B1: 183 ml/day). For supine shunt flow, there were no significant differences among the four groups (1.1–9.1 ml/day).

In all groups, IVPs in the sitting position were significantly lower than those in the supine position. IVPs in the supine position were the lowest in group A1 (0.7 ± 1.1 cmH₂O) and the highest in group B2 (22.0 ± 4.3 cmH₂O). Intermediate values were found for groups A2 and B1 (5.9 ± 3.0 and 12.7 ± 5.4 cmH₂O, respectively). IVPs in the sitting position were also the lowest in group A1 (-17.5 cmH₂O) and the highest in group B2 (0.5 ± 4.0 cmH₂O). Intermediate values were found for groups A2 and B1 (-13.0 ± 2.8 and -10.7 ± 9.1 cmH₂O, respectively). Even the high-pressure Sophy valve without an ASD showed overdrainage and highly negative IVP in the sitting position. In contrast, overdrainage was well controlled in the shunt systems with an ASD. The experimental shunt flow and the least IVP necessary to initiate shunt flow account well for our clinical experiences.

Upgrading the Sophy valve resistance alone is not sufficient to prevent SDH and SVS. Combined use together with an ASD is essential when patients assume the erect position ¹⁾

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http://rd.springer.com/chapter/10.1007%2F978-4-431-68156-4_41

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