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Evaluation of the Miethke-Dual-Switch Valve in Patients with Normal Pressure Hydrocephalus

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Objective: In patients with normal pressure hydrocephalus (NPH) conventional differential pressure valves bear the disadvantage of opening suddenly, when the patient moves into an upright position. This could result in a strong suction on the already atrophic brain. Can this disadvantage and especially the complication of the overdrainage be reduced or solved by a gravitational valve?

Methods: 128 patients diagnosed for NPH in a prospective multicenter study were surgically treated with an implantation of a Miethke-Dual-Switch valve. All patients were re-evaluated in an average of seven months after operation.

Results: The evaluation of the course of disease showed in 63 percent of cases an excellent outcome, in 16 percent a satisfactory and in 21 percent of the patients a bad outcome. The patients' outcome correlated with the preoperative severity of disease scored with the Kiefer-Scale. Complications as well as the valve pressure levels are discussed in this paper. We also present the technical principles of this new valve technology. With a shunt-related overdrainage rate of two percent and a lethality of zero percent the complications of the Miethke-Dual-Switch valve are clearly lower than comparable results presented in the international literature.

Conclusion: The clinical course of patients suffering from NPH is influenced by the stage of the disease, the beginning of therapy and the implanted valve type (Figure 4, Figure 5). Despite the restricted clinical experiences with the Miethke-Dual-Switch valve we have to underline the advantages of this valve for patients with NPH.