Experience with a gravitational valve in the management of symptomatic overdrainage in children with shunts.

Abstract:
Symptomatic overdrainage in children with shunt-treated hydrocephalus represents one of the more difficult shunt-related diseases and may require repeated surgery. Gravity-assisted valve design has become a standard device to avoid overdrainage in many European pediatric hydrocephalus centers. However, the use of a gravitational valve for relieving symptoms associated with overdrainage has not yet been addressed. The goal of this study was to evaluate the effectiveness of a gravitational valve in the treatment of symptomatic overdrainage in children with shunts. Seventeen children with an adjustable shunt system and symptomatic overdrainage were treated by insertion of a gravitational valve. Clinical and radiological outcome were monitored for a minimum of 12 months after surgery. Implantation of a gravitational valve resulted in either resolution ($n = 12$) or improvement ($n = 5$) of the symptoms. In 1 patient, symptoms remained almost unchanged and the gravitational valve had to be upgraded, resulting in resolution of the symptoms. During follow-up, the pressure setting of the adjustable differential pressure valve had to be changed in 7 patients. The gravitational valve was effective in improving symptomatic overdrainage in the majority of patients in the present study. Because the ideal pressure setting for a given patient is hard to determine a priori, adjustable...
valve systems appear to be beneficial.