Meta-analysis of hemorrhagic complications from ventriculostomy placement by neurosurgeons.

BACKGROUND: Ventriculostomy placement is an important diagnostic and therapeutic tool for neurosurgeons. Multiple authors have presented retrospective series of patients evaluating periprocedure hemorrhage.

OBJECTIVE: We performed a meta-analysis of existing studies to determine a more accurate rate of hemorrhage.

METHODS: A MEDLINE and PubMed search was performed to find all studies of 25 or more patients conducted since 1970 that found a hemorrhagic complication rate from placement of a ventriculostomy. Studies in which a non-neurosurgeon placed the ventriculostomy and studies involving premature infants were excluded.

RESULTS: Sixteen studies were used to obtain data from 2428 ventriculostomy procedures. Hemorrhage was found after 203 procedures, and 52 of these hemorrhages were deemed significant by the authors. The cumulative rate of hemorrhage was 7.0% (95% confidence interval: 4.5%-9.4%), with P < .05. The cumulative rate of significant hemorrhage was 0.8% (95% confidence interval: 0.2%-1.4%) with P < .05.

CONCLUSION: Based on our meta-analysis, the overall hemorrhagic complication rate from ventriculostomy placement by neurosurgeons is approximately 7%. The rate of significant hemorrhage from ventriculostomy placement is approximately 0.8%. Further prospective studies are warranted to better address this question.

DOI 10.1227/NEU.0b013e31821a45ba