A Retrospective Case Review of Endoscopic Assisted, Neuro-navigation Guided Evacuation of Intracerebral Hemorrhage Using the ApolloTM System

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Introduction

Spontaneous intracerebral hemorrhage (ICH) accounts for 10-15% of all stroke cases and has been associated with high rates of morbidity and mortality. While larger volume of hemorrhage correlates with poorer outcome, open craniotomy for evacuation has not demonstrated clinical benefit. In contrast, some minimally invasive techniques for ICH removal have shown a correlation with hemorrhage volume reduction and patient outcome. The recently approved Apollo System provides a minimally invasive approach for continuous fluid removal. Reported herein is a case review of initial experience using the Apollo System in the endoscopic assisted, neuro-navigation guided clot evacuation of ICH.

Methods

This was a retrospective case review of consecutively enrolled patients treated with the ApolloTM System since October 2014. Baseline characteristics, clinical performance, safety, and follow up data were assessed. Volume of hemorrhage was calculated using the A*B*C/2 method. Grading scale for potential clot removal was used.

Results

To date 9 patients were identified and met analysis criteria. 22.2% were female. Mean age was 51±18. Hemorrhage location comprised of 77.8% basal ganglia, 11.1% ventricular circulation, 11.1% other. Mean clot volume at baseline was 39.5±34.3cc. Immediate post-procedure, mean clot volume was 5.5±9.8cc with a percent clot reduction average of 91.6±8.6% ($p = 0.0078$). 8/9 patients had a final clot volume below 15cc. Following the procedure, only 1 patient required the need for shunt placement and 44.4% of patients were discharged home. Mean length of stay in the ICU was 8.9±4.9 days.

Conclusions

Initial experience using the ApolloTM System in the evacuation of ICH shows promising results in rapidly reducing overall clot volume with a favorable safety profile and ICU stay compared with historical controls. Further study is required to determine the association between the reduction in clot volume and outcome measures such as length of hospital stay and clinical recovery.

Learning Objectives

By the conclusion of this session, participants should be able to describe the importance of ICH volume on clinical outcome, and identify minimally invasive treatment for ICH removal to reduce hemorrhage volume