

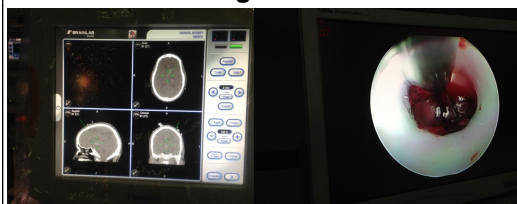
Introduction

The surgical treatment of spontaneous intracerebral hemorrhage (SICH) remains controversial. Recently, the Apollo system, a novel device equipped with an agitator at the end of a strengthened suction tip, has been utilized in combination with an endoscope for stereotactic deep-seated hematoma evacuation. We review our initial experience using the Apollo device.

Methods

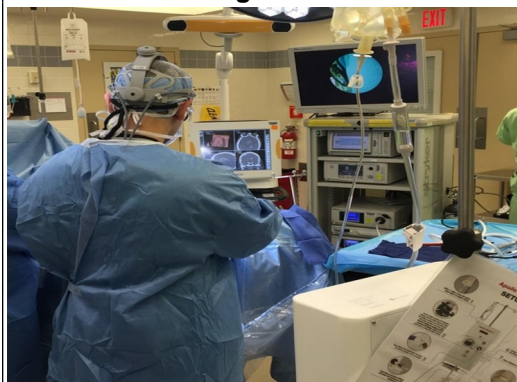
A retrospective chart review was performed from January 2015 through October 2015. 8 patients were identified that underwent hematoma evacuation with the new device.

Figure 1



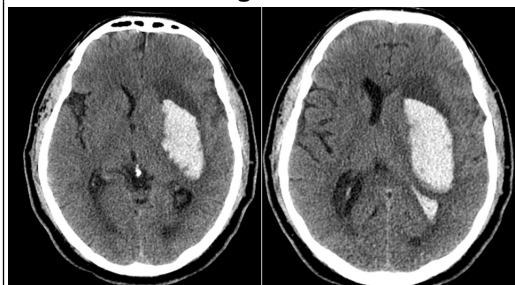
Stereotactic and Endoscope Guidance

Figure 2



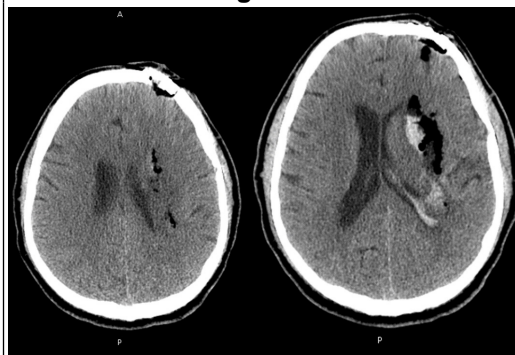
Operative set-up

Figure 3



Case #1 Pre-treatment

Figure 4



Case #1 Post-treatment

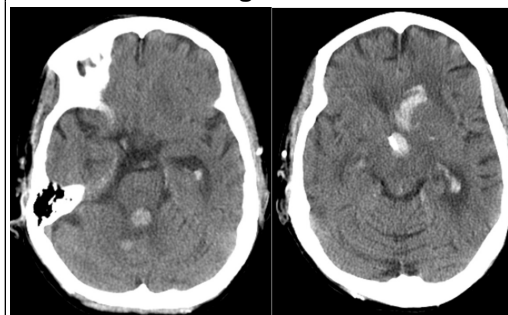
Results

The mean age of the patients: 59.8 years. The median presenting GCS was 7T, with 5 patients having an ICH score predicted mortality of 72%. There were 2 deaths during hospital stay for a 25% 30-day mortality rate. The mean pre-operative volume: 34.4ml (range 12-76.5) and post-operative volume was (excluding 1 patient with worsened hematoma post-operatively): 14.8ml (range: 2-48), with a mean of 63.2% reduction in volume. The median GCS upon latest clinical follow-up: 10T, with 6 out of 8 patients achieving an improvement in pre-operative exam.

Conclusions

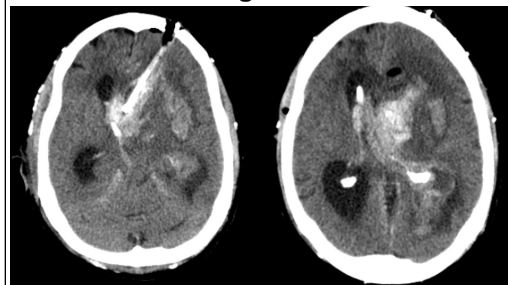
The Apollo device, although promising, has an expected learning curve in the operating room. One needs to become facile with frameless intraoperative navigation. Optimal timing for improved evacuation appears to be 24-48 hours post-ictus. In addition, using standard coagulation assays and thromboelastography has helped in identifying and reversing coagulopathies. Also, intra-operative imaging would greatly enhance surgeon feedback to determine further attempts at hematoma evacuation. Overall, the device can attain improved surgical outcomes, but requires specific patient selection and technical familiarity.

Figure 5



Apollo Case # 2: Pre-treatment

Figure 6



Apollo Case # 2: Post-treatment

Learning Objectives

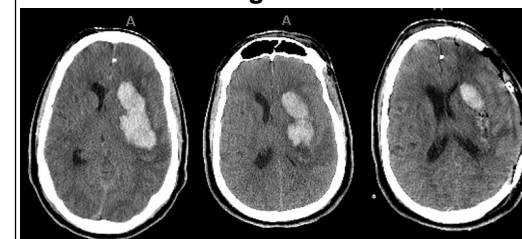
We present our initial experience using the Apollo system for evacuation of deep seated intracerebral hemorrhages

Figure 7



Pre and Post-operative treatment of intraventricular hemorrhage

Figure 8



Attempted endoscopic evacuation with subsequent hemicraniectomy