Initial Experience With a Novel Minimally Invasive Intracerebral Hemorrhage Evacuation System

Zachary Troiani, BA; Luis Ascanio-Cortez, MD; Kurt Yaeger, MD; Jacques Lara-Reyna, MD; Christopher P Kellner, MD
Disclosures

Christopher Kellner reports Research Grant Support from the following companies: Integra, Penumbra, Siemens, Cerebrotech, Minnetronix

Christopher Kellner reports Ownership interest in Metis Innovative
Introduction

- Intracerebral Hemorrhage (ICH) accounts for 10-20% of all strokes and is associated with a 40% mortality rate at 30 days and 75% functional dependence at 6 months.

- Trials evaluating surgery for ICH have overall produced negative results with some success in minimally invasive evacuation studies evaluating active evacuation techniques.

- In 2019, the MISTIE III trial reported that patients with post-op hematoma volumes ≤ 15 mL experienced improved functional outcome at 1 year relative to patients managed medically.

- Here, we present our institution’s initial experience with a novel aspiration-irrigation system for minimally invasive surgiscopic clot evacuation of supratentorial ICHs.
Methods

● All patients who presented with an ICH between July and December 2019 were triaged to a single hospital and evaluated for minimally invasive surgiscopic evacuation.

● Eligible patients presented with:
  ○ Primary supratentorial hemorrhage $> 15$ mL
  ○ National Institutes of Health Stroke Scale (NIHSS) $\geq 6$
  ○ Glasgow Coma Score (GCS) $\geq 4$
  ○ Modified Rankin Scale (mRS) $\leq 3$
  ○ Head Computed Tomography Angiogram (CTA) demonstrating no vascular abnormality
  ○ Were not eligible for active minimally invasive evacuation device trials or registries
Minimally invasive surgiscopic evacuation

- A surgiscope is a port with a camera mounted on the proximal end of the port for intracavitary visualization.

- The evacuator is an aspiration wand that connects to wall suction and on the distal tip has a side facing aspiration window that houses a rotating wire loop that aids in morcellating fibrous clot when activated.

The Aurora Surgiscope System and the Aurora Evacuator are FDA cleared, and manufactured by Integra Lifesciences.
Results

- Mean presenting NIHSS score: $17.3 \pm 9.7$
- Mean time to evacuation: $18.7 \pm 12.5$ hours
- Hematoma Evacuation Percentage = $86.9 \pm 12.4$ mL
Surgical Outcomes

- Hemostasis was achieved in all patients prior to closure
- One procedure-related complication:
  - CSF leak at incision site
- 30-day rebleed, readmission, and mortality: 0%
Discussion

- Minimally invasive surgiscopic clot evacuation is feasible.

- Hematoma evacuation percentage (86.9%) and post-operative residual hematoma volumes in this case series are acceptable and comparable to alternative evacuation techniques.

- Currently, multiple prospective clinical trials are underway to investigate the effectiveness of minimally invasive clot evacuation.
Summary

- The surgiscope and associated evacuator is a novel, disposable clot evacuation technology.

- Our initial experience suggests that clot evacuation with the surgiscope and evacuator is feasible.

- A prospective study is necessary to evaluate the safety, feasibility, and effectiveness of this device.