

# Intraventricular Hemorrhage Evacuation with Endoscope-Based Neuroevacuation Device: Case Report of Novel Application of this Device

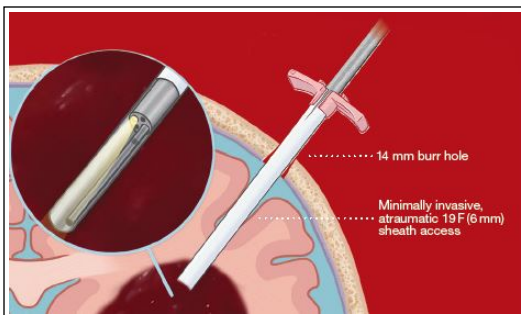
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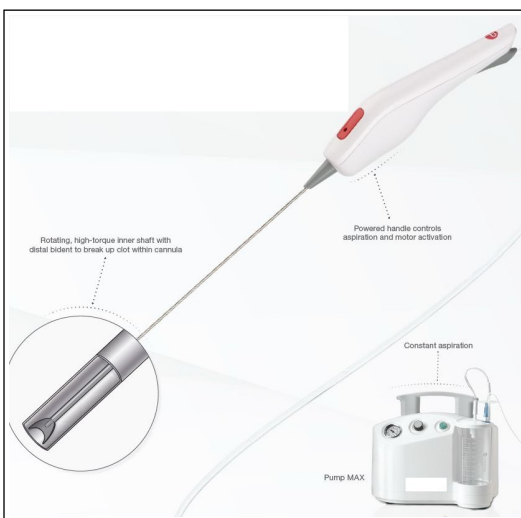


## Introduction

Intraventricular hemorrhage (IVH) with associated hydrocephalus remains a highly morbid condition despite mainstay treatment with placement of an external ventricular drain (EVD). In this case, we sought to reduce intraventricular blood load through novel application of an endoscope-based, image-guided, neuro evacuation device.



**Figure 1.** Nineteen French peel-away sheath used to cannulate ventricle prior to introducing neuroendoscope and neuroevacuation device.



**Figure 2.** Neuro evacuation device (27 cm wand with 0.109 in outer diameter with capability for fingertip controlled graded vacuum aspiration aided by rotational energy) connected to suction/aspiration device.

## Methods

A 59 year old woman with history of a coil-embolized basilar apex aneurysm and hypertension presented to the emergency department with altered mental status and was found to have an 8.1 cc left thalamic intracerebral hemorrhage (ICH) with IVH and acute hydrocephalus. The left lateral and third ventricles were near-completely filled and the right lateral ventricle was less than 25% filled with blood in the frontal horn only. A right frontal EVD was placed on admission. On post-bleed day 1, patient was brought to the operating room for a Kocher's point left frontal burrhole craniotomy with image-guided cannulation of the left lateral ventricle with 19Fr peel-away sheath. An irrigating neuroendoscope with central port was then used to introduce the neuro evacuation device (27 cm wand with 0.109 in outer diameter with capability for fingertip controlled graded vacuum aspiration aided by rotational energy) for intraventricular clot evacuation.

## Results

Clot extending from left frontal horn to third ventricle was completely evacuated leaving less than 25% of clot within the atrium of the left lateral ventricle. A second EVD was then placed through the 19Fr cannula after clot evacuation.

## Conclusions

Significant intraventricular clot volume reduction was achieved through novel application of an image-guided, endoscope-based, neuro evacuation device with no immediate postoperative complications. With further applications and study, this technique may prove a fruitful addition to the armamentarium of IVH treatment with goals of reducing EVD days, ventriculostomy-associated infections, progression to shunt-dependence, and reduction of hospital days.

## Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the morbidity and mortality of intraventricular hemorrhage (IVH), 2) Describe our novel technique applying an image-guided, endoscope-based, neuro evacuation device to reduce intraventricular clot burden in case of IVH

