Introduction

Endoscopic minimally invasive intracerebral hemorrhage evacuation is a novel procedure under formal evaluation in clinical trials. Intraoperative DYNA CT and ultrasound are used by some surgeons to assess the presence, quantity, and location of residual hematoma.

Intraoperative CT perfusion after evacuation may provide additional information to guide the procedure.

Methods

A 68 year old male presented with large right basal ganglia and frontal ICH measuring 74cc and an NIHSS of 16. He was brought for emergent endoscopic ICH evacuation in a Siemens angiography suite.

Intraoperative post-evacuation CT perfusion was performed using the NeuroSyngo Parenchymal Blood Volume (PBV) CT program.

Results

A) Presurgical cerebral angiogram did not show active bleeding
B) Intraoperative DYNA CT performed after endoscopic visualization and intraoperative ultrasound demonstrated minimal residual hematoma.
C) Intraoperative CT perfusion demonstrated a spot sign at the location of an artery that had been cauterized during the procedure.
D) Repeat DYNA CT after 10 minutes demonstrated additional hemorrhage in cavity and a second pass was made with the endoscope for further evacuation. The bleeding artery was identified and further cauterized.
E) The final DYNA-CT demonstrated 90% evacuation, confirmed by regular CT scan (F)

Conclusions

Intraoperative imaging may play an important role in endoscopic ICH evacuation. CT perfusion has not yet been described as an intraoperative imaging modality but has some advantages such as the potential ability to evaluate residual hematoma, tissue viability after decompression, and active bleeding, as demonstrated here.