

**ENDOSCOPIC HEMATOMA EVACUATION FOR  
SPONTANEOUS CEREBELLAR HEMORRHAGE**

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# Background

- The surgical indication for the intra cerebral hemorrhage have been controversial.
- What kind of surgery would be selected, invasive technique or less invasive technique?

# Materials & Methods

**Patients:** 333 patients were treated by endoscopic since 2000 to 2016

Spontaneous Cerebellar Hemorrhage

35 cases (10.5%)

M:F = 21 : 14, mean-Age: 70.0 y-o

Control Patient Group: n=12

treated by suboccipital craniectomy surgery

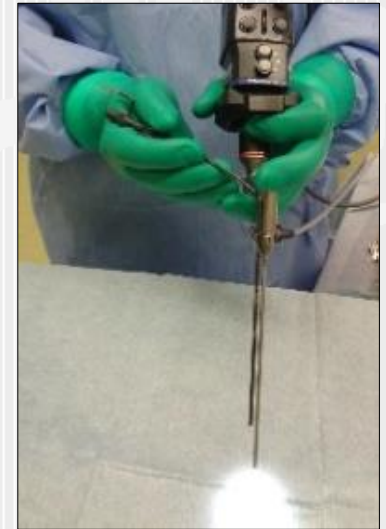
## Retrospective Review:

Surgical time (min), Rate of Hematoma Evacuation (RHE, %)

Rate of VP shunt (%), Outcome (GOS)

# Endoscopic Hematoma Evacuation

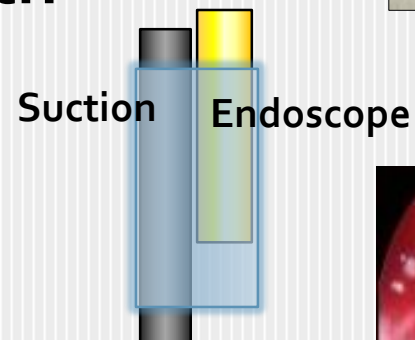
## Rigid endoscope



## Transparent Clear Guide Sheath



OD:  $\Phi 8\text{mm}$ , ID:  $\Phi 6\text{mm}$

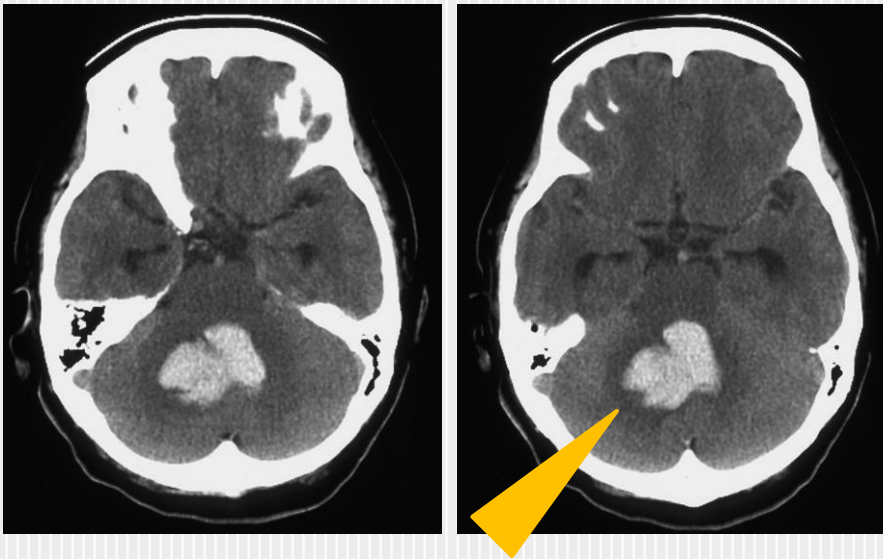


**Hemamota**



# Illustrative case

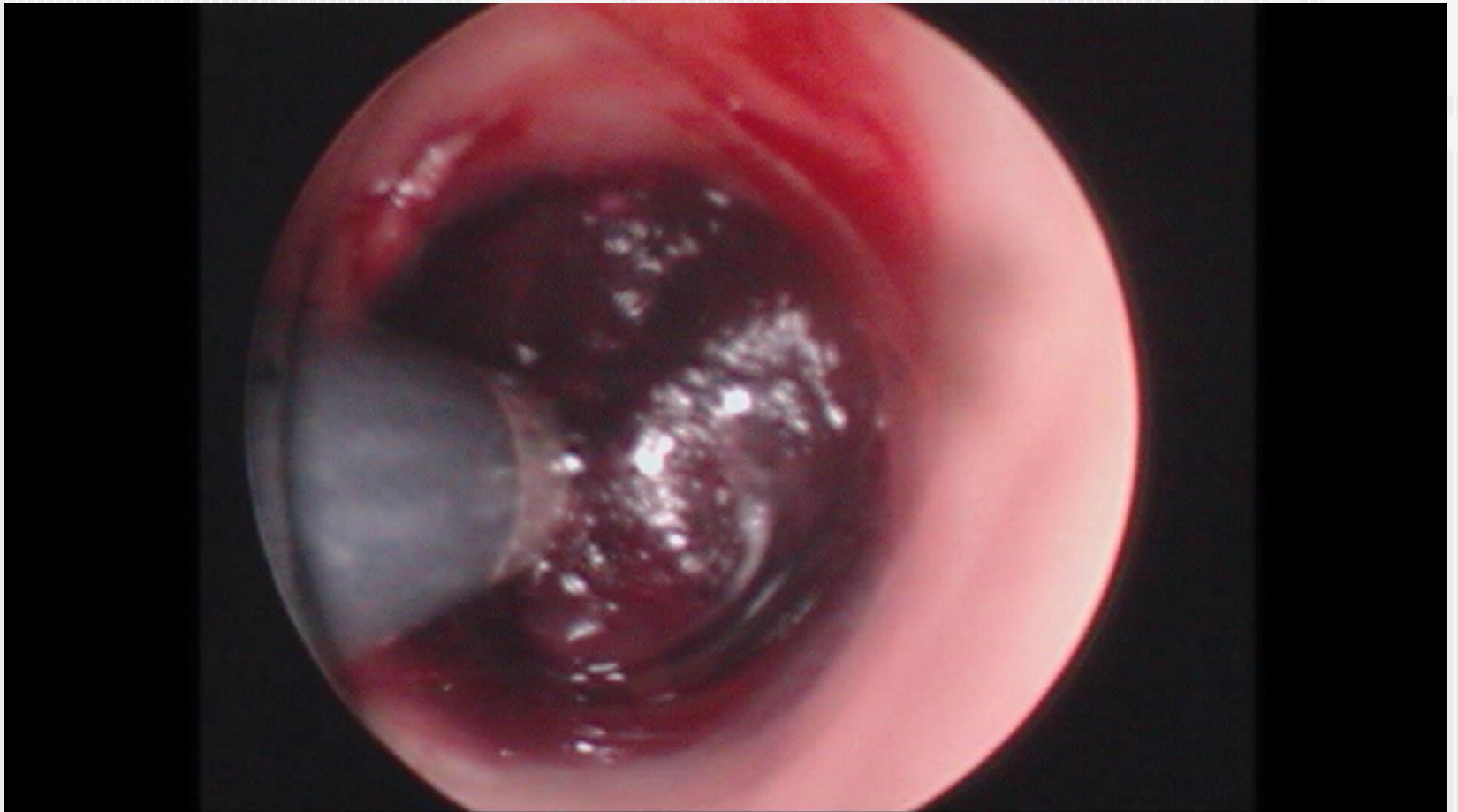
- 61 y-o, woman
  - hypertension, hyperlipidemia
  - Initial GCS: 12pts, deteriorated to 9pts



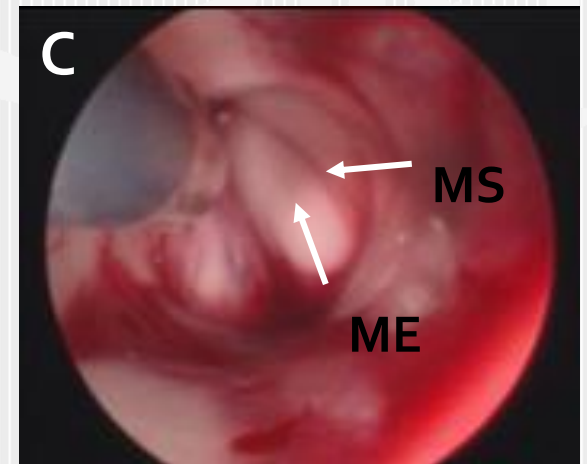
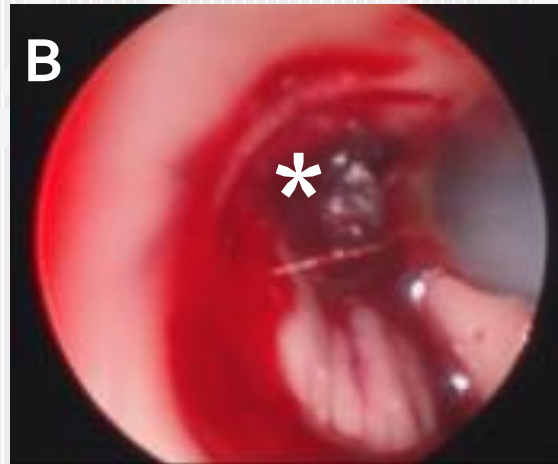
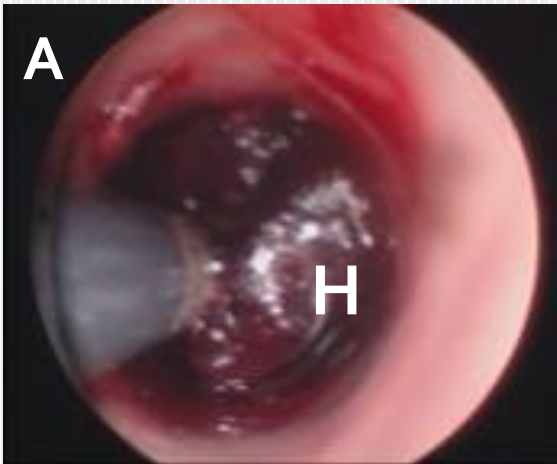
Hematoma: 18.3ml  
IVH in IVth vent.  
Acute hydrocephalus

Surgery was started  
7hrs after onset.

# Lt. lateral position



# Endoscopic View

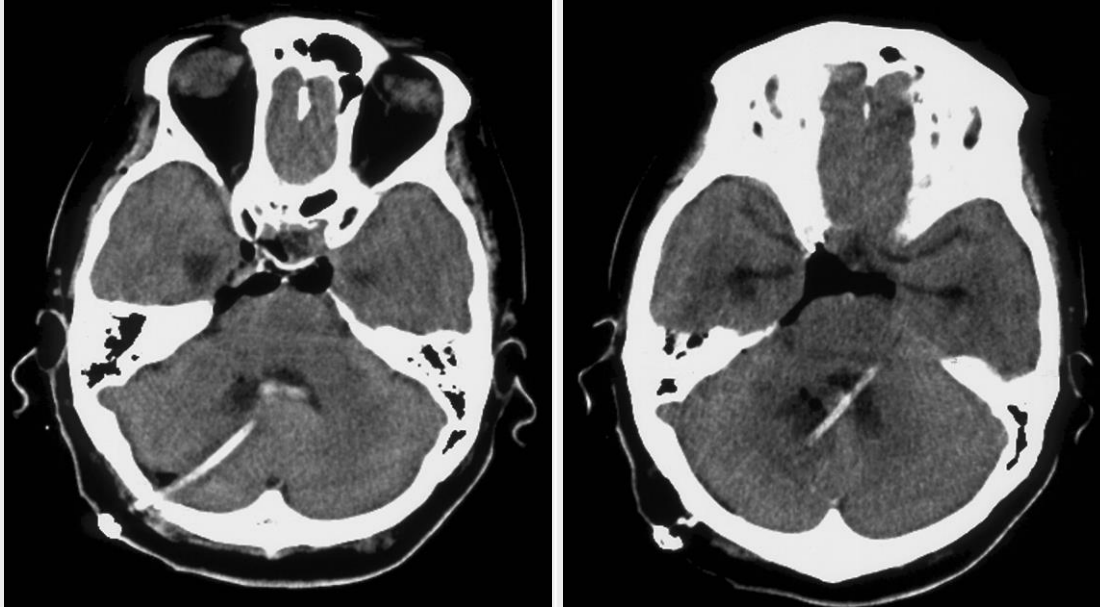


MS: median sulcus, ME: median eminence

A: Hematoma (H) was aspirated under the endoscopic view.  
The floor of IVth ventricle could be observed (C) after the herniated hematoma (\*) into the IIIrd ventricle was removed (B).

# Illustrative case

- Operation time: 70min
- CT on the day after surgery
  - 95% hematoma was removed





# Surgical Results

Results	Endoscope Gr.	Suboccipital Gr.	Stat.
Hematoma vol.	18.7 ± 9.5 ml	24.8 ± 10.5 ml	ns*
Surgical time	74.8 min	230.6 min	P<0.01*
RHE	93.5 %	90.6 %	ns*
V-P shunt	14.3 %	30.0 %	P<0.05**
GOS (GR+MD)	64.5 %	30.0 %	P<0.05 <sup>†</sup>

RHE: rate of hematoma evacuation, ns: not significant, \*: unpaired t-test, \*\*:  $\chi^2$  test, †: Mann–Whitney U test

# What is the most optimal approach?

What is the most optimal approach?

	Endoscopic ap.	Suboccipital ap.
Surgical position	supine ~ lateral	lateral ~ prone
Access to hematoma	simple	complicate
Observation of aqueduct	relatively easy	difficult
Surgical time	shorter	longer
Subcutaneous fluid collection	rare	not rare
Surgical Invasiveness	less invasive	invasive



# Conclusions

- The endoscopic surgery could improve the functional outcome in the patient with cerebellar hemorrhage.
- The advantage of this less invasive technique should be established by the official clinical study in future.