ENDOSCOPIC HEMATOMA EVACUATION FOR SPONTANEOUS CEREBELLAR HEMORRHAGE

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Background

- The surgical indication for the intracerebral 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: Φ8mm, ID: Φ 6mm
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

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).

MS: median sulcus, ME: median eminence
Illustrative case

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

<table>
<thead>
<tr>
<th>Results</th>
<th>Endoscopy Gr.</th>
<th>Suboccipital Gr.</th>
<th>Stat.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematoma vol.</td>
<td>18.7 ± 9.5 ml</td>
<td>24.8 ± 10.5 ml</td>
<td>ns*</td>
</tr>
<tr>
<td>Surgical time</td>
<td>74.8 min</td>
<td>230.6 min</td>
<td>P&lt;0.01*</td>
</tr>
<tr>
<td>RHE</td>
<td>93.5 %</td>
<td>90.6 %</td>
<td>ns*</td>
</tr>
<tr>
<td>V-P shunt</td>
<td>14.3 %</td>
<td>30.0 %</td>
<td>P&lt;0.05**</td>
</tr>
<tr>
<td>GOS (GR+MD)</td>
<td>64.5 %</td>
<td>30.0 %</td>
<td>P&lt;0.05†</td>
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</tbody>
</table>

RHE: rate of hematoma evacuation, ns: not significant, *: unpaired t-test, **: x² test, †: Mann–Whitney U test
What is the most optimal approach?

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<thead>
<tr>
<th></th>
<th>Endoscopic ap.</th>
<th>Suboccipital ap.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical position</td>
<td>supine ~ lateral</td>
<td>lateral ~ prone</td>
</tr>
<tr>
<td>Access to hematoma</td>
<td>simple</td>
<td>complicate</td>
</tr>
<tr>
<td>Observation of aqueduct</td>
<td>relatively easy</td>
<td>difficult</td>
</tr>
<tr>
<td>Surgical time</td>
<td>shorter</td>
<td>longer</td>
</tr>
<tr>
<td>Subcutaneous fluid</td>
<td>rare</td>
<td>not rare</td>
</tr>
<tr>
<td>collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgical Invasiveness</td>
<td>less invasive</td>
<td>invasive</td>
</tr>
</tbody>
</table>
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.