

Endoscopic surgery for intracerebral hemorrhage

Li et al. performed a study to explore the efficacy and safety of different surgical interventions in patients with [spontaneous supratentorial intracranial hemorrhage](#) (SSICH) and determine which intervention is most suitable for such patients.

They searched the [PubMed](#), [Medline](#), [OVID](#), [Embase](#), and [Cochrane Library](#) databases. The [quality](#) of the included studies was assessed. Statistical analyses were performed using the software [Stata](#) 13.0 and [RevMan](#) 5.3.

[Endoscopic surgery](#) (ES), [minimally invasive surgery](#) combined with [urokinase](#) (MIS + UK), minimally invasive surgery combined with [recombinant tissue plasminogen activator](#) (MIS + rt-PA), and [craniotomy](#) were associated with higher survival rates and a lower risk of intracranial [rebleeding](#) than [standard medical care](#) (SMC) in patients with SSICH, especially in younger patients with few comorbidities. The order from highest to lowest survival rate was ES, MIS + UK, MIS + rt-PA, craniotomy, and SMC. The order from lowest to highest intracranial rebleeding risk was ES, MIS + UK, craniotomy, MIS + rt-PA, and SMC. Additionally, compared with SMC, all four surgical interventions (ES, MIS + rt-PA, MIS + UK, and craniotomy) improved the prognosis and reduced the proportion of patients with serious disability. The order from most to least favorable prognosis was MIS + rt-PA, ES, MIS + UK, craniotomy, and SMC. The order from highest to lowest proportion of patients with serious disability was ES, MIS + rt-PA, MIS + UK, craniotomy, and SMC.

This study revealed that the efficacy and safety of different surgical interventions (ES, MIS + UK, MIS + rt-PA, craniotomy) were superior to those of SMC in the patients with SSICH, especially in younger patients with few comorbidities. Among them, ES was the most reasonable and effective intervention. ES was found not only to improve the survival rate and prognosis but also to have the lowest risk of intracranial rebleeding and the lowest proportion of patients with serious disability ¹⁾.

Some studies indicated that the endoscope-assisted keyhole approach might be an efficiency, safety, and minimal invasiveness surgical intervention for [intracerebral hemorrhage](#) ^{2) 3)}

Controlled clinical trials are needed to evaluate the full potential and limitations of this promising technique ⁴⁾.

The residual hematoma cannot be measured intraoperatively from the endoscopic view, and it is difficult to determine the precise location of the endoscope within the hematoma cavity.

Use of ultrasound guidance minimized the occurrence of brain injury due to hematoma evacuation ⁵⁾.

Case series

Among 35 patients with putaminal or subcortical hemorrhage that was evacuated endoscopically, 14 cases (40%) presented both findings of neurological grade IV for severity and hematoma volume exceeding 70 mL in the recent 3 years (endoscope group), whereas 8 cases with the same conditions

were treated by conventional craniotomy for the preceding 3-year period (craniotomy group). Between these two groups, mean age was higher and duration of surgery was shorter in the endoscope group, but no significant differences in hematoma size or evacuation rate were recognized. In the 10 cases that presented with signs of cerebral herniation (neurological grade IVb) and required emergent decompression, the preparation time for surgery tended to be shorter in the endoscope group, although the difference was not significant. Additional ventricular drainage was performed in 7 cases and showed a supplemental effect of reducing intracranial pressure (ICP). Consequently, all patients in the endoscope group were rescued without decompressive large craniectomy, even with symptoms of cerebral herniation. In conclusion, endoscopic surgery has the potential to offer an effective therapeutic option for comatose patients with large supratentorial intracerebral hemorrhages, matching conventional craniotomy for emergent treatment in terms of mortality and management of ICP ⁶⁾.

Case reports

A 47-year-old man was admitted sustaining 13 points in Glasgow coma scale with brain computed tomography (CT) scan showing a temporal contusion. Guided by a 3D reconstructed CT, using the program OsiriX®, the posterior limit of the hematoma was identified. A burr hole was placed at the posterior temporal region, and we used the neuroendoscope to assist the hematoma evacuation. The postoperative tomography showed adequate hematoma removal. He was discharged from hospital 48 h after surgery. Two weeks later, he was conscious and oriented temporally. This endoscopic-assisted technique can provide safe removal of traumatic hematomas of the temporal lobe ⁷⁾.

References

- 1)
Li M, Mu F, Su D, Han Q, Guo Z, Chen T. Different surgical interventions for patients with spontaneous supratentorial intracranial hemorrhage: A network meta-analysis. *Clin Neurol Neurosurg.* 2019 Nov 20;188:105617. doi: 10.1016/j.clineuro.2019.105617. [Epub ahead of print] PubMed PMID: 31775069.
- 2)
Nagasaka T, Tsugeno M, Ikeda H, Okamoto T, Inao S, Wakabayashi T. Early recovery and better evacuation rate in neuroendoscopic surgery for spontaneous intracerebral hemorrhage using a multifunctional cannula: preliminary study in comparison with craniotomy. *Journal of Stroke & Cerebrovascular Diseases.* 2011;20(3):208-213.
- 3)
Cho D-Y, Chen C-C, Chang C-S, Lee W-Y, Tso M. Endoscopic surgery for spontaneous basal ganglia hemorrhage: comparing endoscopic surgery, stereotactic aspiration, and craniotomy in noncomatose patients. *Surgical Neurology.* 2006;65(6):547-555.
- 4)
Beynon C, Schiebel P, Bösel J, Unterberg AW, Orakcioglu B. Minimally invasive endoscopic surgery for treatment of spontaneous intracerebral haematomas. *Neurosurg Rev.* 2015 Jul;38(3):421-8; discussion 428. doi: 10.1007/s10143-015-0606-6. Epub 2015 Feb 17. PubMed PMID: 25687253.
- 5)
Sadahiro H, Nomura S, Goto H, Sugimoto K, Inamura A, Fujiyama Y, Yamane A, Oku T, Shinoyama M, Suzuki M. Real-time ultrasound-guided endoscopic surgery for putaminal hemorrhage. *J Neurosurg.* 2015 Jun 5:1-5. [Epub ahead of print] PubMed PMID: 26047414.
- 6)
Yamashiro S, Hitoshi Y, Yoshida A, Kuratsu JI. Effectiveness of Endoscopic Surgery for Comatose

Patients with Large Supratentorial Intracerebral Hemorrhages. *Neurol Med Chir (Tokyo)*. 2015 Sep 11. [Epub ahead of print] PubMed PMID: 26369719.

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Nascimento CN, Amorim RL, Mandel M, do Espírito Santo MP, Paiva WS, Andrade AF, Teixeira MJ. Endoscopic-assisted removal of traumatic brain hemorrhage: case report and technical note. *J Surg Case Rep*. 2015 Nov 3;2015(11). pii: rjv132. doi: 10.1093/jscr/rjv132. PubMed PMID: 26537390.

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