

Basal Ganglia Hemorrhage Case Series

2020

A study aimed to improve the accuracy and efficacy of the keyhole transsylvian approach to remove hypertensive [basal ganglia hemorrhage](#). Lin et al. presented a stable [keyhole craniotomy](#) based on anterior [squamosal suture](#) to expose [insular](#) cortex and [basal ganglia](#).

Twenty-nine patients with hypertensive basal ganglia hemorrhage were treated with keyhole surgery and studied in Guangdong sanjiu brain hospital.

By using a bone suture marked keyhole transsylvian approach, near-complete (90%) hematoma evacuation was achieved in 21 cases (72.4), 70% to 90% in 8 cases (24.1), and less than 70% in 1 case (3.4%). In our cohort, 55.1% (16/29) with good function (GOS score 4-5), 41.3% (12/29) with disability (GOS score 3), and 3.4% (1/29) in a vegetative state (GOS score 2). No patients died within 6 months of operation.

This method can greatly minimize the bone exposure and precisely located the distal Sylvian fissure. A stable keyhole craniotomy based on bone suture can be identically safe and effective in comparison with classic surgery, and it consumes less time and less intra-operative bleeding ¹⁾.

2019

A retrospective survey was conducted on 123 cases of basal-ganglia SICH patients who received surgery from January 2015 to January 2019. Postoperative rehemorrhage within 24 hours was recorded. Preoperative clinical parameters, surgeon experience (<10 years and >20 years), operation time, surgical approach, and hemostasis technique were recorded and analyzed.

The total postoperative rehemorrhage rate was 12.2% (15/123). The univariable analysis showed general surgeons had a higher postoperative rehemorrhage rate than experienced surgeons (30.4% versus 8.6%, $P=0.068$). The operation time in experienced surgeons was significantly longer (164.9 ± 53.5 versus 137.7 ± 30.8 , $P=0.016$), but they had a higher chance to locate the responsible vessel (74.2% versus 40.0%, $p=0.001$). Logistic analysis indicated that experienced surgeon significantly reduced the risk of rehemorrhage (odds rate(OR)=0.242, $P=0.021$). Transsylvian approach was a protective factor for postoperative rehemorrhage (OR=0.291, $P=0.045$).

Surgeons' experience plays the most important role in postoperative rehemorrhage. Surgeons with rich experience were willing to spend more time to achieve definitive hemostasis in operation. The use of transsylvian approach can significantly reduce rehemorrhage rate. Packing hemostasis with gelatin sponge may increase the complication ²⁾.

Fu et al. described the [device](#) and use of the technique for hematoma puncture surgery in basal ganglia hematomas and report on the precision of the simulation experiments compared to that of freehand puncture, as well as its clinical application in 16 cases.

The accuracy of this technique was superior to that of freehand puncture. All 16 patients underwent successful puncturing of the hematoma cavity or ventricles only once without any related complications.

They demonstrated a novel simple puncture positioning and guidance system that has the advantages of simplicity, low-cost, device availability, and individual real-time guidance. They believe this system may be useful in resource-limited centers where navigation is not available ³⁾.

2017

112 patients with spontaneous ICH in basal ganglia who received MIPD or ES were reviewed retrospectively. Baseline parameters prior to the operation, evacuation rate (ER), perihematoma edema, postoperative complications, and rebleeding incidences were collected. Moreover, 1-year postictus, the long-term functional outcomes of patients with regard to hematoma volume (HV) or Glasgow Coma Scale (GCS) score were judged, respectively, by the case fatality, Glasgow Outcome Scale (GOS), Barthel Index (BI), and modified Rankin Scale (mRS). The ES group had a higher ER than the MIPD group on postoperative day 1. The MIPD group had fewer adverse outcomes, which included less perihematoma edema, anesthetic time, and blood loss, than the ES group. The functional outcomes represented by GOS, BI, and mRS were better in the MIPD group than in the ES group for patients with HV 30-60 mL or GCS score 9-14. These results indicate that ES is more effective in evacuating hematoma in basal ganglia, while MIPD is less invasive than ES. Patients with HV 30-60 mL or GCS score 9-14 may benefit more from the MIPD procedure than from ES ⁴⁾.

2015

A series of 87 patients who had received surgical therapy individually were enrolled in this study. The surgical therapies were stereotactic aspiration (SA), stereotactic aspiration plus fibrinolytic therapy (SA+F) and microsurgery with small bone window (MS), respectively. The outcomes of the patients were evaluated by evolution of hematoma evacuation, activities of daily living (ADL) scale, mortality and complications.

We found that there was no significant difference in the 24-hour evacuation rate, mortality and complication rate among treated groups ($P>0.05$). Though patients in level III and level IV of ADL scores were significantly different among the three groups, the overall ADL scale result demonstrated a similar ADL result.

The patient with HBGH should be treated with individualized surgical approach according to patient's condition and CT morphology of the hematoma ⁵⁾.

2014

The total 30-day mortality rate of patients with [basal ganglia](#) haematomas of 30 ml or more and [ICH scores](#) of 1 was significantly lower in the surgical group than in the conservative group. For the patients with ICH scores equal to 2, the 30-day mortality rate was obviously decreased in the surgical group compared with that in the conservative group. It demonstrated that [hematoma](#) clot

evacuation could limit the [brain edema](#) and local [ischaemia](#).

The 30-day mortality rate of patients with basal ganglia haematomas volume of ≥ 30 ml and signs of [brain herniation](#) was up to 90% even the hematoma was evacuated surgically within 24 h after the [ictus](#). In a study of Liu et al., 16 of 18 patients with signs of herniation died within 1 week. The possible explanation was that only removal of haematomas might be insufficient to relieve the increased [intracranial hypertension](#). The intra-cranial hypertension would increase again to severe values in few hours because of [brain swelling](#).

Furthermore, the patients with ICH scores equal to 3, the 30-day mortality rate was higher in the surgical group than in the conservative group. Therefore, Treatment should be individualised for patients with basal ganglia haemorrhages. The ICH score was highly associated with the 30-day mortality rate of patients with basal ganglia haemorrhages, which was similar to other studies.

Therefore, the ICH score would provide a standard assessment tool, which can be determined rapidly and easily, for treatments selection of patients with hypertensive basal ganglia haemorrhage.

This study demonstrated that surgical intervention would decrease the 30-day mortality rate of patients with hypertensive basal ganglia haematomas of ≥ 30 ml and ICH scores of 1 or 2. But this retrospective study had some limitations. The hematoma removal was through different surgical procedures. Some patients with large haematoma didn't receive surgical intervention because of economy; However, a subset of patients with basal ganglia hematoma volume of < 30 ml and shift of midline ≥ 5 mm received surgical removal of hematoma. A more definitive conclusion will be achieved from the future trial ⁶⁾.

1)

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4)

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