

## Acute one-stage surgery for arteriovenous malformations

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**Background:** Arteriovenous malformations (AVM) usually present with intracranial hemorrhage. The timing of surgical treatment in the acute stage remains controversial. There is consent to perform urgent surgery in clinically deteriorating patients. But the question is whether to only evacuate intracranial hematoma or to resect malformation as well in one surgery. We present our cohort of patients with intracranial hemorrhage related to AVM (bAVM-ICH) treated by one-stage surgery.

**Methods:** We have retrospectively reviewed patients presented to our department with AVM between 2013 and 2023 and selected only patients with bAVM-ICH. All patients proceeded with acute surgery which involved the evacuation of hematoma and resection of AVM in one surgery. The basic data (age, sex, medication, comorbidities) were analyzed. The specific data were the location of AVM, Spetzler-Martin grade (SM grade), Spetzler Ponce classification, and AVICH score. The outcome was assessed with a modified Rankin Scale at discharge of patients, after a month, and after three months.

**Results:** Ten patients were included in our study - three women and seven men. The average age was 46 years. Five patients had hypertension, anticoagulant or antiplatelet therapy was not present in patients. About AVMs - SM grade I was presented in one patient (10 %), grade II in seven patients (70 %), and grade III in two patients (20 %). Localization was mainly in the frontal or temporal lobe, one patient had AVM in the parietal lobe. AVICH score ranged from 5 points to 11 (average 7,8). All patients proceeded with evacuation of ICH and resection of AVM, four patients required decompressive craniectomy. The average mRS at the discharge of patients was 3,8, after one month 3,5, and after three months 2,8. In 7 patients (70 %) was improvement in mRS during these three months. After three months, three patients were with mRS 1, and four patients with mRS 3. Unfortunately, two patients with mRS 4, and one patient was with mRS 5.

**Conclusion:** We present our surgical results in a cohort of patients treated for bAVM-ICH in acute one-stage surgery. In total, we included ten patients, three of them with excellent results (mRS 1) and three of them with satisfactory results (mRS 3). In our cohort, we achieved satisfactory results, but sample size and single-center retrospective analysis limited our study. Our idea for one-stage surgery is in view of one surgical procedure, one general anesthesia, and faster recovery.