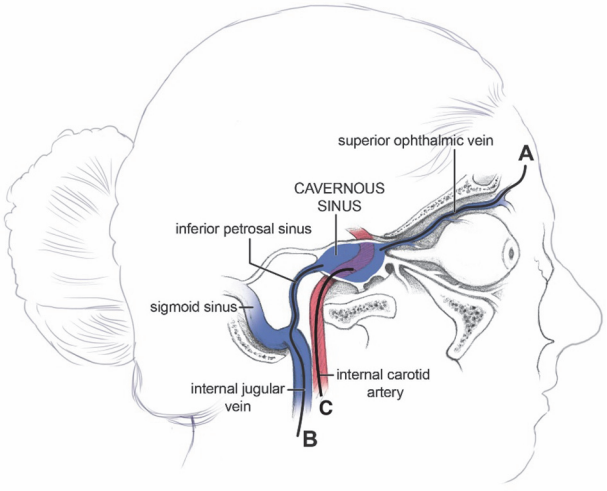

Abstract E-174 Figure 1

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E-175 PARTICLE EMBOLIZATION OF THE MIDDLE MENINGEAL ARTERY FOR SUBDURAL HEMATOMA: EFFICACY AND COST CONSIDERATIONS

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Introduction/Purpose Subdural hematoma is an increasingly common pathology encountered in an aging population. Due to medical comorbidities in elderly patients and risks associated with hospitalization and surgery, optimal management of asymptomatic or minimally symptomatic chronic subdural hematoma (cSDH) an be challenging. Embolization of the middle meningeal artery (MMA) is a procedure with low invasiveness and has been shown to be efficacious in reducing subdural hematoma thickness. The recent presentation of the EMBOLISE, MAGIC-MT, and STEM trials show the safety and efficacy of liquid embolisate for MMA embolization when compared to surgery alone for cSDH. Our study aims to reinforce the efficacy of particle embolization and demonstrate the feasibility of particle embolization with monitored anesthesia care (MAC).

Materials and Methods A retrospective review was conducted at a single academic institution. Patients were included who underwent middle meningeal artery embolization for subdural hematoma from 2020–2022. Medical records were reviewed for patient demographics, medical comorbidities, nature of symptoms, and procedural details. Radiographic data was collected from imaging review for thickness of subdural hematoma in greatest dimension prior to the procedure and at most recent follow-up. The primary endpoints were rescue surgical evacuation of subdural hematoma after MMA embolization and decrease in subdural hematoma thickness by 50%.

Results A total of 63 patients were identified and 59 were included, with 43 male patients and 16 female patients. Average age of patients was 72 years (range 52–90). Pre-procedure thickness of subdural hematoma on average was 14.7 ± 6.2 mm and average midline shift on pre-procedure CT was 6.2 ± 4.5 mm. Thirty-one patients (52.5%) were on antiplatelet medications prior to admission. Nineteen patients (32.3%) were on anticoagulation medications prior to admission. All patients were treated with polyethylene vinyl (PVA) particles. Three patients required general anesthesia for the procedure, whereas MAC was utilized for the other 56. Post-procedurally, 6 patients had symptomatic SDH recurrence requiring operative intervention (10.2%). Thirty-three (55.9%) patients had decreased SDH size by 50% at last follow up. Zero patients suffered neurologic deterioration on comparison of admission and follow-up modified Rankin scale.

Discussion This single center retrospective review demonstrates similar efficacy and safety outcomes for particle embolization of the MMA for cSDH treatment compared to recent trials for liquid embolisate. The cost of 45–150 micron PVA particles is $153, which is more than 20 times cheaper than a vial of Onyx, which is $3334. Trials on a larger scale are necessary to compare embolic agents in the setting of major cost differences to hospital systems and patients.

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E-176 SHOULD WE INTERVENE EARLIER IN NEONATES WITH VEIN OF GALEN MALFORMATIONS? REVISITING THE BICÊTRE SCORE

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Introduction Neonates with Vein of Galen malformations (VOGM) require early assessment to determine the need for endovascular embolization. The Bicêtre Neonatal Evaluation Score, a 21-point risk stratification score published in 2006, was historically used to inform management: under 8 points suggested withdrawing treatment, 8 to 12 points suggested neonatal intervention, and over 12 points suggested delaying to the infantile period. However, the score is no longer strictly employed and may bias outcomes. As endovascular techniques and technology have improved over time, a new decision-making paradigm may more accurately reflect modern treatment outcomes.

Methods A single-center retrospective review identified all VOGM patients presenting in the neonatal period from January 2012 to May 2023. Patients were included if they had fetal or neonatal imaging within the first ten days of life and if they had not previously received intervention. Intervention at our center was offered based on the neonate's cardiopulmonary status, neurologic status, and responsiveness to medical management. Bicêtre scores were retrospectively calculated from available data at the time of the decision to offer neonatal or infantile intervention.

Results Forty-four patients with VOGM were identified. Twenty-six patients received neonatal intervention, with Bicêtre scores ranging from 6 to 17, and 18 patients were delayed for infantile intervention with Bicêtre scores ranging from 17 to 21. The median Bicêtre score of the neonatal treatment

group was 14.5 with interquartile range of 12.75–15.25. The median Bicêtre score of the infantile treatment group was 21 with interquartile range of 19.5–21. No infants (0%) and three neonates (11.5%) with scores 9, 12, and 16 expired despite neonatal embolization, compared to 7.2% of infants and 52% of neonates in the Bicêtre series. One neonate (2.3%) experienced massive postprocedural hemorrhage with subsequent mortality, compared to 5.6% of patients in the Bicêtre series.

Conclusions Our window of acceptable Bicêtre scores for neonatal embolization has increased in range and trended toward higher scores with improved mortality compared to the original case series. An updated risk stratification algorithm is necessary to ensure that intervention is not inappropriately delayed or withheld entirely in patients who may benefit from early embolization.

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E-177 POST-OPERATIVE OUTCOMES FOLLOWING ANGIOPLASTY OR STENT PLACEMENT IN PATIENTS WITH INTRACRANIAL ATHEROSCLEROTIC DISEASE: A RETROSPECTIVE, COHORT STUDY

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Introduction/Purpose Intracranial atherosclerotic disease (ICAD) is a significant risk factor for ischemic stroke, and treatment is critical for prevention of initial or recurrent stroke. Treatment of ICAD includes medical management or intracranial angioplasty and stenting, although existing data regarding the utility of each have been ambiguous. The efficacy of intracranial angioplasty and stenting has been scrutinized due to high rates (2.6–14.7%) of periprocedural complication. This study aims to examine the outcome of angioplasty with or without stent placement, in a cohort of patients with symptomatic intracranial stenosis.

Materials and Methods Patients with symptomatic ICAD with prior ischemic stroke or TIA, who underwent either angioplasty with stenting or angioplasty alone. The patients were divided into acute (angioplasty or stent placement within 7 days of presentation) or subacute group (angioplasty or stent placement after 7 days from presentation). Complications of recurrent stroke with new neurological deficit and death, were evaluated at 72-hour and 30-day intervals.

Results Of 37 total patients, 62% (n=23) had a previous stroke and 38% (n=14) had prior TIA. The mean preprocedural degree of stenosis was 84% (70–99%), with 21 patients (57%) having posterior-circulation stenosis and 16 patients (43%) with anterior-circulation stenosis. 14 patients were not receiving any medical therapy at the time of presentation, however all included patients were started on dual antiplatelet therapy prior to procedure. 32 total patients underwent angioplasty AND stent placement, and five patients underwent angioplasty alone. The mean interval from presentation to stent placement was 3.4 days, with 28 patients in the acute group and 9 in the subacute group. The mean post-procedure degree of stenosis was 29% (0–60%). The 72-hour complication rate was 16.2% (6 of 37 patients); there were 3 cases of new neurological deficit and 3 cases of death. All 72-hour complications occurred in patients treated in the acute window. At 30 days, one additional complication of a new neurological deficit related to stent occlusion had occurred.

Conclusion In this study, 30 of 37 patients (81%) demonstrated a positive outcome after intracranial stenting with or without angioplasty. Of the patients who experienced complications, all were treated acutely (within 7 days from time of presentation). These results concur with those presented in other trials that demonstrated a potential advantage to delaying surgical treatment to after 7 days from initial presentation.

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E-178 INCIDENCE AND CLINICAL OUTCOMES OF PERFORATIONS DURING MECHANICAL THROMBECTOMY FOR MEDIUM VESSEL OCCLUSION IN ACUTE ISCHEMIC STROKE: A RETROSPECTIVE, MULTICENTER, AND MULTINATIONAL STUDY

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Background Mechanical thrombectomy (MT) has revolutionized the treatment of acute ischemic stroke (AIS) due to large vessel occlusion (LVO), but its efficacy and safety in medium vessel occlusion (MeVO) remain less explored. This multicenter, retrospective study aims to investigate the incidence and clinical outcomes of vessel perforations (confirmed by extravasation during an angiographic series) during MT for AIS caused by MeVO.

Methods Data were collected from 37 academic centers across North America, Asia, and Europe between September 2017 and July 2021. A total of 1373 AIS patients with MeVO underwent MT. Baseline characteristics, procedural details, and clinical outcomes were analyzed.

Results The incidence of vessel perforation was 4.8% (66/1373). Notably, our analysis indicates variations in perforation rates across different arterial segments: 8.9% in M3 segments, 4.3% in M2 segments, and 8.3% in A2 segments (p = 0.612). Patients with perforation had significantly worse outcomes, with lower rates of favorable angiographic outcomes (TICI 2c-3: 23% vs 58.9%, $p < 0.001$; TICI 2b-3: 56.5% vs 88.3%, $p < 0.001$). Functional outcomes were also worse in the perforation group (mRS 0–1 at 3 months: 22.7% vs 36.6%, $p = 0.031$; mRS 0–2 at 3 months: 28.8% vs 53.9%, $p < 0.001$). Mortality was higher in the perforation group (30.3% vs 16.8%, $p = 0.008$).

Conclusion This study reveals that while the occurrence of vessel perforation in MT for AIS due to MeVO is relatively rare, it is associated with poor functional outcomes and higher mortality. The findings highlight the need for increased caution and specialized training in performing MT for MeVO.