

a potentially safe and effective method of treating cSDH. Pertinent literature, however, remains limited. The current study reports our center's experience with MMA embolization and examines the type of embolic material used, the extent of penetration, and MMA branches embolized.

Methods A prospectively maintained endovascular treatment database was retrospectively analyzed for all patients whom underwent MMA embolization from January 1st, 2018 to December 31st, 2019. Six patients without at least 30 days of follow-up were excluded. A failed outcome was defined as either surgical rescue and/or >10 mm of residual or reaccumulation after MMA embolization. Secondary outcomes included: complete and near-complete (<5 mm) resolution of the cSDH, mRS >2 on follow-up, and worse mRS on follow-up.

Results The 34 patients that met the inclusion criteria had an average age of 68±12 years. Twenty-four patients were male (71%). Twenty-three had suffered a preceding trauma (68%), and 13 were on antiplatelet or anticoagulant (38%) medications. Headache (N=14, 41%), focal neurological deficit (N=15, 44%), and altered mental status (N=11, 32%) were the most common presenting symptoms. Nine (26%) had failed surgery and 6 (18%) had failed conservative treatment. Transradial access was utilized for 20 patients (59%). One ischemic complication (3%) occurred in a patient with a type 3 arch who underwent transfemoral embolization. Average preoperative mRS was 2.0±1.4 and follow-up mRS was 1.8 ±1.4 with an average follow-up days of 110±72. Ten patients (29%) had a mRS >2 and 1 patient (3%) had a worse mRS on follow-up. A total of 40 MMA embolizations were performed (6 patients with bilateral cSDH had bilateral MMA embolization). Embolic agents included Onyx (N=27, 68%), particles (N=9, 20%), and NBCA (N=4, 10%). Both the anterior and posterior MMA branches were embolized in 27 (68%) and distal penetration of these branches was achieved in 23 (58%) patients. Twenty-two cSDHs (55%) completely resolved while 33 (83%) had either complete or near-complete resolution. Failed embolization occurred in only 3 cSDHs (8%), none in patients in whom both anterior and posterior MMA branches embolized (p=0.029).

Conclusion In our series, our procedure has evolved to transradial access for Onyx embolization which is both safe and efficacious. Furthermore, embolization of both the anterior and posterior MMA branches may be associated with a decrease risk of failed treatment. Future randomized control trials and/or large prospective studies are warranted, with attention to optimizing the procedural technique.

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COMBINED DILUTED N-BCA GLUE AND PARTICLE EMBOLIZATION FOLLOWED BY A 'SUGAR RUSH' D5W BOLUS IN MIDDLE MENINGEAL ARTERY (MMA) EMBOLIZATION FOR CHRONIC SUBDURAL HEMATOMAS: A PROSPECTIVE SAFETY AND TECHNICAL FEASIBILITY STUDY

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Introduction In recent years, embolization of the middle meningeal artery (MMA) for treatment of refractory or recurrent chronic subdural hematomas (SDH) has gained momentum. The rationale is the formation of the neo-membrane, with the MMA providing feeding vessels to the outer membrane connected to the dura mater. Various techniques like the use of polyvinyl particles and Onyx have been explored. We present the technical feasibility of using very diluted n-butyl-2-cyanoacrylate (NBCA) for embolization.

Methodology Patients were enrolled from Westchester Medical Center from September 2019- March 2020, with chronic refractory or recurrent subdural hematomas. Informed consent was obtained from patients and/or families. Embolization of the frontal and parietal branches of the MMA was performed using a very dilute mixture of 1:6 n-BCA and ethiodized oil, with 5% dextrose (D5) boluses from the guide catheter to improve the distal penetration of the glue. Visibility was improved by using Tantalum powder. Cases with ophthalmic collaterals from the MMA were excluded. The prowler select plus Codman Neuro (Johnson & Johnson), 2.3. 0.021 was used for all cases. Follow up CT head was performed at day 7, day 21 and 3 months.

Results A total of 11 patients were prospectively enrolled. The mean age was 71 years, male to female ratio of 2:1. 10 of the 11 cases were traumatic, one was a patient with lupus on anticoagulation. A total of 5 of 11 patients were on anticoagulation at the time of the SDH. Nine of the 11 patients had prior neurosurgical intervention including subgaleal drains and burr holes. The 7 day follow-up CT head was available for 9 of 11 and demonstrated improvement (>50% reduction in SDH volume) in 7/9 (77%), with 2/9 (22%) showing an unchanged or stable SDH. Day 21 CT head was available for 5/7 patients (71%), all demonstrating significant further improvement (>75% reduction in SDH volume). There were no intra or post procedural complications (non-target embolization or unintentional retention of the catheter) in the 11 patients enrolled (0%).

Conclusion Embolization of the MMA using very diluted n-BCA and ethiodized oil (1:6) is safe and effective for chronic SDH patients with a low risk of recurrence, and is considered an effective therapeutic intervention to arrest hematoma enlargement and promote resolution. The use of a 'sugar rush' D5 bolus improves distal penetration of the glue.

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PRIMARY RAPID-EXCHANGE CORONARY BALLOON ANGIOPLASTY FOR THE TREATMENT OF RECURRENT SYMPTOMATIC INTRACRANIAL ATHEROSCLEROTIC DISEASE

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Background Treatment of intracranial atherosclerotic disease (ICAD), a common cause of ischemic stroke worldwide, has been highly controversial. The SAMMPRIS trial revealed that best medical management (BMM) is superior to Gateway balloon angioplasty and Wingspan stenting for patients with symptomatic high-grade ICAD. Therefore, stenting is reserved for those failed BMM. Early evidence suggests that primary balloon angioplasty (PBA) may be an alternative option for