Access to the subarachnoid space has both diagnostic and therapeutic implications. A multitude of routes have been described, including lumbar, lateral atlanto-occipital, and suboccipital puncture for access to the cisterna magna. Suboccipital puncture, a now seemingly archaic technique, was initially popular and widely implemented in the early 20th century due to the capacious foramen magnum and outstanding safety profile. Lumbar puncture eventually replaced the former due to the ease of access, decreased risk of catastrophic injury, and reliability of access without image guidance. However, there is now a growing body of literature which clearly demonstrates that therapeutic delivery via suboccipital puncture results in superior cortical and cervical spine exposure when compared to lumbar puncture. This is germane for a number of congenital and acquired diseases which could potentially be treated with adeno-associated virus (AAV) gene therapy as well as other treatment modalities. The suboccipital approach can also serve as a viable alternative for diagnostic CSF access as well as therapeutic delivery.


**Methods** A retrospective analysis of patients who underwent MMAE for cSDH at the University of California, San Diego was performed. Data collected included post-procedural complications such as focal neurologic deficit, cognitive decline, and groin access-point hemorrhage identified within the first 4 hours, 24 hours, and delayed manner respectively. Success of treatment was defined as patient stability and return to baseline following the post-procedure assessment protocol performed routinely at our institution. We further characterized patients with the Charlson Comorbidity Index (CCI) to identify higher risk populations that would require increased observation. The CCI was also used to determine a cut-off point for same-day discharge eligibility.

**Results** We analyzed data from 95 patients that had 143 subdural hematomas treated at our institution. Of the 95 patients, 93 patients (98%) had no complications following our institution’s standardized assessments after MMAE or at discharge the following day. Average SDH size was 12.9mm. Twenty-one patients underwent surgical drainage after MMAE. Following MMAE, two patients presented complications; one patient, an 83-year-old female, developed transient headache and blurry vision one day after MMAE and was discharged uneventfully; this patient had a CCI of 4 points. The other patient was a 77-year-old male with metastatic prostate carcinoma and had an SDH volume expansion one day after the procedure which required operative intervention with burr-hole craniotomy and drainage; this patient had a CCI of 9 points (0% estimated 10-year survival). The remaining 93 patients suffered no complications after MMAE.

**Conclusion** Time-effectiveness and low complication rates make MMAE an ideal same-day procedure for patients with cSDH and a low CCI score. The grand majority of patients had no complications following MMAE, suggesting a large patient population that may benefit from the same-day procedure aspect of intervention. Although some patients underwent planned surgical drainage, the embolization component of management was uneventful. Our analysis provides evidence that MMAE could develop into an ambulatory procedure in patients with cSDH and a low comorbidity profile; this could have economic benefits for both the patients requiring and the institutions offering the procedure. Further prospective studies are needed to strengthen these findings.


**Introduction** Middle meningeal artery embolization (MMAE) is a fundamental piece in the management of Chronic Subdural Hematoma (cSDH) that prevents recurrence and can serve as primary treatment for nonoperative candidates. MMAE offers time-effectiveness, since it may be performed in less than one hour under minimal sedation. As the COVID-19 pandemic makes inpatient beds scarce, MMAE could potentially become a same-day procedure which poses a potential economic benefit for both patients and health institutions alike. We reviewed MMAEs performed at our institution and measured the complication rates in an effort to determine if hospital admission after the procedure is necessary.

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