

mural and choroidal, depending on the respective feeding vessels. At presentation, VOGM is known to cause additional complications in the neonate including hydrocephalus, congestive heart failure, and seizures. Treatment options include coil and microparticle embolization in addition to the recent introduction of the microvascular plug used traditionally for arterial occlusion. In this case presentation, we present the second known case of use of the microvascular plug (MVP) to assist with venous occlusion for a VOGM.

**Method/Case presentation** A 39 weeks male was born via an urgent Cesarean section for right atrial dilation, cardiac arrhythmia thought to be premature atrial complexes and a cerebral vascular malformation. His mother had had a recent fetal ultrasound demonstrating intrauterine growth restriction. Head ultrasound performed after birth demonstrated a large vein of Galen malformation. MRI with angiography and venography demonstrated a 4.3×3.6×4.1 centimeter aneurysmal VOGM with primary supply via a dilated right superior cerebellar artery and primary drainage via a dilated median prosencephalic vein.

**Intervention/Result** Postpartum day 7, the patient showed signs and symptoms of worsening heart failure. Treatment was deemed necessary. The left vertebral artery was catheterized and multiple runs performed revealing a mural type vein of Galen malformation with direct AV fistula from the supplying right superior cerebellar artery. The right superior cerebellar artery was measured at approximately 3.8 mm in diameter. A 3–5 mm Microvascular Plug device was chosen for primary embolization. Post MVP deployment angiographic runs showed decreased flow through the fistula. Three coils were then deployed followed by Onyx 34 in order to completely obliterate the fistula. Final angiographic runs revealed fistula obliteration and patent basilar artery, posterior cerebral arteries, left superior cerebellar artery and left PICA. Follow up cranial US with smaller ventricular size and repeat echocardiography with stable hemodynamics and without evidence of heart failure.

**Conclusion** This is the second case documented in the literature demonstrating the utility of the microvascular plug for assistance in embolization of a VOGM. The utility of this device is limited by vessel diameter and appropriate landing zone requirements. Further investigation is needed to assess feasibility as well as short and long term outcomes and possible related complications from embolization including postoperative development of hydrocephalus which common in both our case and the previously published literature.

**Disclosures** M. Mathkour: None. E. McCormack: None. J. Berry: None. A. Dumont: None. E. Valle-Giler: None.

E-005

#### TRANSRADIAL ACCESS IN THE PEDIATRIC POPULATION

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10.1136/neurintsurg-2019-SNIS.80

**Introduction/Purpose** The transradial approach (TRA) for neurointerventional procedures has recently garnered interest as an alternative to the traditional transfemoral approach (TFA) in adult patients. While the benefits of the TRA have been well reported in adult patients, there is a paucity of reports in the literature regarding its use in the pediatric and adolescent populations. The paucity of literature regarding the TRA for neurointerventional procedures in the pediatric population is

likely due to fear of spasm in the narrow caliber radial artery as well as the perceived difficulty in navigating the cerebrovasculature through the TRA. At our institution we have implemented the radial first approach in most adult diagnostic and interventional cases. More recently, we have transitioned to the use of the TRA in pediatric patients as well. Here we present the first reported case series utilizing the TRA in the pediatric population, demonstrating its safety and efficacy for both diagnostic and neurointerventional procedures.

**Materials and methods** N/A

**Results** We retrospectively collected data on patients undergoing transradial intervention from July 2018 to Feb 2019. We have 4 pediatric patients in whom the TRA was used. Indications included JNA embolization (2), right ICA pseudoaneurysm which failed medical management (1), and right cerebellar AVM (1). In all cases, a 6F sheath with a 6F ENVOY guide catheter (Codman- DePuy Synthes, Raynam, MA) was used. One patient developed radial artery vasospasm, and 5 mg verapamil was administered intraarterially post-procedure. The patient did not have any complaints post-procedurally. All preprocedural objectives were met, and none of the interventions required changing to the TFA. The radial artery remained patent in all 4 patients post-procedurally.

**Conclusion** The TRA is safe, effective, and well tolerated in the pediatric population. Most importantly, the risk of bleeding and arterial damage, the most common complications following interventional procedures, is essentially eliminated with the TRA. Ultrasound guided measurement of the artery to ensure caliber over 2 mm is recommended in this population to avoid complications.

Abstract E-005 Table 1

	Age	Sex	Indication	Catheters Used	Complications
Case 1	14	Male	JNA	6F system with ENVOY guide, Simmons 2	None
Case 2	14	Male	Right cerebellar AVM	6F system with ENVOY guide, Simmons 2	None
Case 3	15	Female	Right ICA pseudoaneurysm	6F system with ENVOY guide, Simmons 2	Right artery vasospasm, resolved with 5 mg intraarterial verapamil
Case 4	13	Male	JNA	6F system with ENVOY guide, Simmons 2	None

**Disclosures** N. Majmudar: None. P. Patel: None. V. Dodson: None. I. Bach: None. J. Liu: None. L. Tomyz: None. P. Khandelwal: None.

E-006

#### MULTIPLE FLOW-RELATED INTRACRANIAL ANEURYSMS IN THE SETTING OF CONTRALATERAL CAROTID OCCLUSION: A CASE REPORT AND REVIEW OF THE LITERATURE

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10.1136/neurintsurg-2019-SNIS.81

**Background** Severe stenosis or occlusion of one internal carotid artery (ICA) may result in increased demand and altered

hemodynamics in the contralateral ICA, thus increasing the risk of IA (intracranial aneurysm) formation in the distribution of the non-stenotic artery. The prevalence of IA is higher in patients with ICA stenosis, likely due to alterations in intracranial hemodynamics. We present a patient with aneurysmal subarachnoid hemorrhage who was found to have multiple flow-related left-sided anterior circulation IA and a chronic right ICA occlusion. We discuss our patient, the considerations for management in this challenging clinical scenario, and review the literature as it pertains to the association of ICA stenosis and IA.

**Case presentation** A 50-year-old female with a chronic asymptomatic right ICA occlusion presented with diffuse subarachnoid hemorrhage. Emergent angiography revealed left-sided A1-A2 junction, paraclinoid, left middle cerebral artery (MCA) bifurcation, and left anterior temporal artery aneurysms. Brisk filling of the right anterior circulation via the anterior communicating artery (ACOM) was also identified, signifying increased demand on the left ICA circulation.

**Treatment/Result** Complete obliteration of the A1-A2 junction, paraclinoid, and MCA bifurcation aneurysms was achieved with coil embolization. The anterior temporal artery aneurysm was obliterated with clipping approximately 6 weeks following the hemorrhage. All coiled aneurysms remained obliterated at the time of the 6-week follow-up angiogram. The patient made a complete neurologic recovery and is living independently. Six-month follow-up MRA showed complete occlusion of all treated aneurysms.

**Conclusion** A review of published case reports/studies of patients with concurrent ICA stenosis and IA revealed a higher number of patients with multiple aneurysms contralateral (25%) to, rather than ipsilateral to (6%), the ICA stenosis. We present a patient with a chronic asymptomatic right ICA occlusion and aneurysmal SAH, who was found to have multiple, likely flow-related, left-sided anterior circulation aneurysms. All aneurysms were obliterated with a combination of endovascular and microsurgical techniques and the patient made a complete recovery.

**Disclosures** M. Mathkour: None. E. McCormack: None. C. Werner: None. P. Amenta: None.

#### E-007 MUTIMODALITY TREATMENT FOR COIL MIGRATION DURING ENDOVASCULAR EMBOLIZATION

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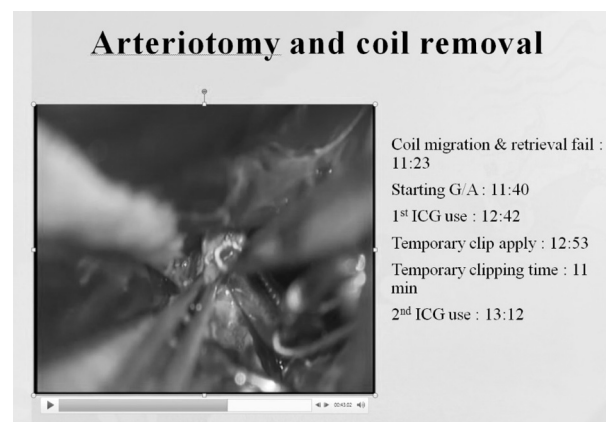
10.1136/neurintsurg-2019-SNIS.82

**Introduction** Distal coil migration during endovascular treatment of intracranial aneurysm occurs in 2~6% of cases. As endovascular coil embolization of aneurysms has become popular, the incidence of intra-procedural coil migration increases. The consequences of coil migration vary significantly from asymptomatic to as severe as large territory cerebral infarction. However, delayed removal of migrated coil could leave a permanent neurological deficit.

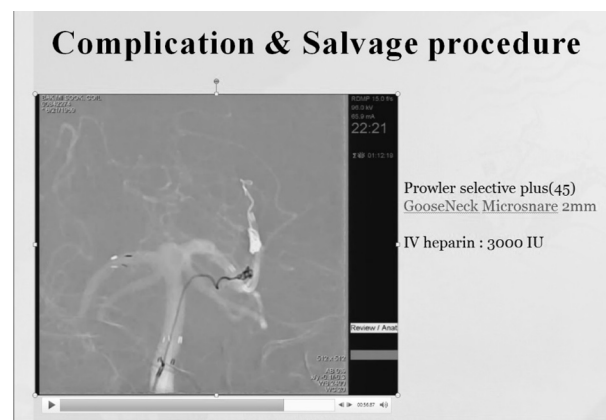
**Materials and methods** Unintended coil migration occurred in 4(0.81%) patients among approximately 500 patients treated between Dec 2013 and Jul 2017 in Eulji university hospital. We report three cases of endovascular retrieval performed with snare technique and retrieval stent technique, and one

case with microsurgical extraction. Surgical or endovascular removal of migrated coil is commonly used.

**Results** All 4 patients with coil migration were treated successfully immediately. For 2 cases, we used Amplatz Goose Neck Snare device to remove coil. And Solitare stent was used for retrieval and coil for 1 case was successfully removed. In last case, All endovascular retrieval technique failed and subarachnoid hemorrhage was combined. Due to emergent situation microsurgical craniotomy and arteriotomy was performed and



Abstract E-007 Figure 1



Abstract E-007 Figure 2

migrated coil was removed. All patients recovered without any complication.

**Conclusion** Migration of coil following embolization of an intracranial aneurysm is rare but can be a fatal complication. Recently the incidences and different results of management have been increasingly reported. In our institution, we performed three cases of endovascular retrieval and one case of surgical retrieval of migrated coil during endovascular coil embolization of intracranial aneurysm. In such urgent situation, operator should consider not only the retrieval of migrated coil but also the consequences following the event such as intracranial hemorrhage or cerebral infarction. Decision between surgical or endovascular retrieval of migrated coil should lead to avoid devastating consequences.

**Disclosure** S. Chung: None. S. Chang: None.