compared to the published literature rates of individuals not receiving post-operative heparin. Additional variables included PTT range, type of heparin protocol used (weight based vs physician controlled), total time of heparinization, heparin dose, and number of PEDs deployed.

Results 0% (0/73) patients developed thrombotic complications in the post-operative period. The reported literature rate of symptomatic thrombotic events is 6.6%. Post-operative heparin reduced symptomatic thrombotic complications following PED placement (p=0.0125). 2.7% (2/73) patients developed intra-parenchymal hemorrhage resulting in neurological deficit, compared to a published rate of hemorrhagic complications approximating 3%.

Conclusions Post-procedural low dose heparin prophylaxis reduces thrombotic complications in the post-operative period, without increasing hemorrhagic complications.

Disclosures I. Rybkin: None. **J. Cooper:** None. **G. Kaur:** None. **F. Al-Mufti:** None. **C. Gandhi:** None. **J. Santarelli:** None.

P-033 DOES SYSTEMIC HYPERTENSION IMPACT RECANALIZATION OF COILED ANEURYSMS?

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Background and Purpose It is well known that hypertension is a significant factor in the formation, growth, and rupture of aneurysms; and recanalization of coiled aneurysms is affected by hemodynamic stress. At present, however, the impact of hypertension on recanalization of coiled aneurysms has not been adequately investigated. We examined the relation between hypertension and subsequent outcomes of coiled aneurysms, using a matched patient analysis.

Methods A total of 715 subjects undergoing coil embolization of intracranial aneurysms between 2011 and 2013 were selected for study. Time-of-flight magnetic resonance (TOF-MRA) or conventional angiography was used (singly or together) to gauge degrees of occlusion after coiling, applying the Raymond classification in grading recanalization. Patients with hypertension were grouped as controlled or uncontrolled, based on blood pressure (BP) readings at outpatient clinics. Hypertensive and non-hypertensive subjects were matched (1:1) for several relevant variables.

Results Overall, 484 patients (67.7%) were hypertensive (controlled, 338; uncontrolled, 146). During the follow-up period (28.6±9.7 months), 129 aneurysms (18.0%) displayed recanalization (minor, 58; major, 71). Patient age, concomitant diabetes, hyperlipidemia, aneurysm size, neck size, depth-to-neck ratio, and aneurysm type differed significantly in hypertensive and non-hypertensive groups. However, group incidences of cumulative recanalization were similar (p=0.297). After 1:1 matching, the cumulative recanalization rate (13.5%) in hypertensive and non-hypertensive counterparts (14.3%) again proved similar (p=0.578). In hypertensive group, in addition, recanalization showed no relation to controlled and uncontrolled subgroup (OR=1.000, p>0.999).

Conclusion Unlike other aspects of evolving aneurysms (ie, formation, growth, or rupture), recanalization of coiled aneurysms is seemingly unaffected by systemic hypertension.

Disclosures Y. Cho: None.

P-034 4D DSA FOR SPINAL CORD VASCULAR MALFORMATIONS EXPLORATION: PRELIMINARY EXPERIENCE

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Background and Purpose Spinal vascular malformations (SVMs) are aggressive diseases that may lead to neurological deficit due to spinal venous engorgement or secondary to hemorrhage.The endovascular treatment of such SVMs may be challenging with a significant risk of failure and/or a risk of severe neurological complications in case of spinal cord vascular supplies compromising. The precise understanding of the angio-architecture of SVMs is of tremendous importance to reduce the risk of treatment failure and the treatment-related complication risk.4D DSA (Siemens Healthcare) is a recently developed technology that has shown its potential for a better understanding of brain AVMs.The purpose of our study was to evaluate the potential of 4D DSA in spinal vascular malformations' exploration.

Material and methods Four consecutive patients (3 males, 1 female, mean age: 49±17 y) with 5 spinal vascular malformations (spinal dural arteriovenous fistula [sDAVF]: n =2, spinal pial arteriovenous fistula [sPAVF]: n = 1 and spinal arteriovenous malformations [sAVMS]: n = 1; one patient had 2 synchronous pial fistulas) had a spinal DSA including 4D DSA acquiiqisition.All the spinal DSA acquisitions were performed under general anesthesia. 4D DSA acquisitions were acquired with the protocol: '12sDSA Dyna4D Neuro'. 12 ml of Iodixanol 320 mg of I/ml were injected via a 5F catheter at 1 ml/s during the 12s of the 4D DSA acquisition. The following criteria were evaluated in consensus by two reviewers:- overall quality of the acquisition- number of arterial feeders- location of the primary shunt point- venous drainage pattern: ascending, descending or both.

Results In 4/5 of the cases (2 dural AV fistulas; 2 pial AV fistulas), the quality of the acquisition was graded good or fair. Satisfactory concordance between 4D DSA and the selective microcatheterization was observed in these 4 cases for the number of arterial feeders, the location of the shunt point and the venous drainage pattern. In one case of cervical spine AVM, the 4D DSA quality was graded poor and the angio-architecture could not be satisfactorily analysed.

Conclusion 4D DSA acquisition may be helpful for a better understanding of spinal vascular malformations' angio-architecture. Larger series are warranted to confirm these first promising results.

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P-035 IS 3 YEARS ADEQUATE FOR TRACKING COMPLETELY OCCLUDED COILED ANEURYSMS?

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Objective To ascertain the long-term durability of coiled aneurysms completely occluded at 36 months during follow-up given the potential for delayed recanalization.

Methods As a retrospective review, we examined 299 patients with 339 aneurysms, all completely occluded at 36 months in follow-up images obtained between 2011 and 2013. Medical records and radiologic data acquired during extended monitoring (mean, 74.3±22.5 months) were retrieved, analyzing incidence (including average annual risk) and risk factors of delayed recanalization.

Results A total of five coiled aneurysms (1.5%) occluded completely at 36 months showed recanalization (0.46% per aneurysm-year) during continued long-term surveillance (1081.9 aneurysm-years), two surfacing within 60 months and three developing thereafter. Four showed minor recanalization, with only one instance of major recanalization. The latter involved posterior communicating artery as an apparent *de novo* lesion, arising at the neck of a firmly coiled sac, and was unrelated to coil compaction or growth. Additional embolization was undertaken. In multivariate analysis, second embolization for recurred aneurysm (HR=22.088, p=0.003) independently correlated with delayed recanalization.

Conclusion Almost all coiled aneurysms (98.5%) showing complete occlusion at 36 months post-embolization proved to be stable in extended observation. Therefore, it is reasonable to suspend imaging surveillance of coiled aneurysms after 3 years in the absence of demonstrable recanalization. However, recurrent aneurysms were predisposed to delayed recanalization.

Disclosures Y. Cho: None.

P-036 NOVEL LIQUID EMBOLIC MATERIAL FOR THE USE OF ENDOVASCULAR TREATMENT: A HYDROPHILIC POLYMER COMPOSITE ACTIVATED BY THE CA2+ IN THE BLOOD

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Introduction/Purpose The New Generation Liquid Embolic Material (NGLEM) is a clear liquid that immediately forms a solid hydrogel cast upon exposure to Ca2+ in the bloodstream. Catheter entrapment is avoided because the material is not adhesive, and the use of organic solvents such as DMSO is unnecessary. The main components of NGLEM are widely used as food additives in the medical and food industries, with much evidence of their biocompatibility. The mechanical behavior of this new liquid embolic material was evaluated using an *in vitro* vascular model as well as an *in vivo* experimental model using a swine.

Materials and methods Experiment 1) A silicon vascular model with multiple aneurysms were connected to a programmable pulsatile flow pump, and isotonic aqueous solution containing 2 mM calcium chloride was circulated. A microcatheter was placed in the aneurysm model, and 1 ml of NGLEM was injected. The behaviors of the injected material and the visibility under fluoroscopy were recorded. Experiment 2) To evaluate the mechanical performance of the NGLEM using in vivo model, a rat renal artery was catheterized with a microcatheter, and NGLEM was injected into the artery. Angiographical evaluation was performed.

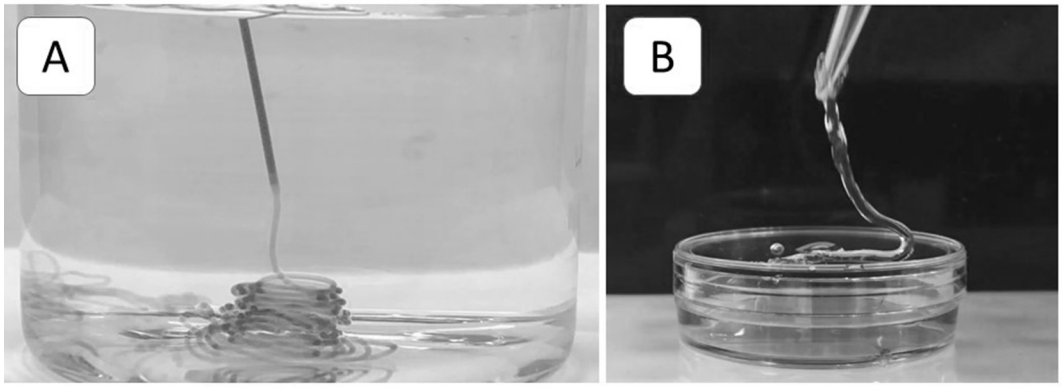
Results Experiment 1) The injected NGLEM formed spherical shaped gel and occluded the aneurysm. Once the injection was completed, the catheter was withdrawn without entrapment. The NGLEM mixed with contrast medium showed sufficient radiopacity under fluoroscopy. Experiment 2) A total of 5 renal arteries of 3 rats were treated with NGLEM. All procedure was performed without technical complications. All vessels were completely occluded with NGLEM, and the total volume required for the occlusion was between 0.4 ml to 0.8 ml. No increased thrombogenicity was observed during the procedure. Post procedure aortogram showed complete occlusion of the treated artery.

Conclusion NGLEM, which is a DMSO free, non-adhesive bio-polymer may be used as an embolic material for endovascular procedure.

Disclosures I. Yuki: 1; C; Institute for Clinical and Translational Science (ICTS) Pilot Award (NIH Director's Transformative Research Award initiative), Principle Investigator, April 1st. 2019 – present. **K. Ohkawa:** 1; C; 17H02080, Japan Society for the Promotion of Science Ohkawa, Kousaku (PI) 04/01/17–03/31/21. **F. Hsu:** 1; C; Institute for Clinical and Translational Science (ICTS) Pilot Award (NIH Director's Transformative Research Award initiative). **S. Suzuki:** 1; C; Institute for Clinical and Translational Science (ICTS) Pilot Award (NIH Director's Transformative Research Award initiative).

Conclusion NGLEM, which is a DMSO free, non-adhesive bio-polymer may be used as an embolic material for endovascular procedure.

Disclosures I. Yuki: 1; C; Institute for Clinical and Translational Science (ICTS) Pilot Award (NIH Director's



Abstract P-036 Figure 1 NGLEM injection in a static electrolyte solution (A) The injected NGLEM forms a cylindrical shaped hydrogel upon exposure to a buffered electrolyte solution. (B) A segment of the hydrogel is extracted from the solution, and its mechanical strength is tested. Note the hydrogel picked up and held with a forceps shows the rubberlike property without being torn off by a vigorous shake.