High Frequency Optical Coherence Tomography (HF-OCT), with a spatial resolution approaching 10 microns, was used to study acute thrombus formation along the surface of the device. HF-OCT acquisitions were acquired 20 minutes following device implant. Specifically, the total clot volume on each side branch opening (SBO) was segmented with manual input by a blinded user. Statistical analyses were performed to determine the relative benefit of the HPC coating and the antiplatelet regiment for prevention of platelet aggregation, a linear model was constructed to interrogate the relative importance.

Results The figure 1 shows one section from each device type. It was found that device type and aspirin where significantly correlated with thrombus volume over SBOs. Mean thrombus volume per mm^2 of SBO for coated versus control devices was 0.00033 mm versus 0.087 mm, respectively ($p = 0.005$). Mean clot per SBO was 0.004 mm versus 0.15 mm in animals receiving aspirin versus NAPT ($p<0.001$). The linear model found that mean thrombus (0.222 mm) was dramatically reduced by the HPC coating (coefficient = -0.221), aspirin use (coefficient = -0.214), and that the combined effect removed nearly all clot.

Conclusions This preliminary evidence shows the dramatic effect that the coating can have on the acute thrombus formation. Further, this novel HF-OCT technology allows for quantitative measurements of the amount of thrombus formed on the surface of a flow diverter, not just the presence. Finally, this study shows the possibility that the combined effect of aspirin and this new coating may be sufficient antiplatelet therapy.

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O-013 FLOW-DIVERTER BIOLOGICAL IMPROVEMENT WITH CD31 BIOMIMETIC: PRECLINICAL EXPERIENCE

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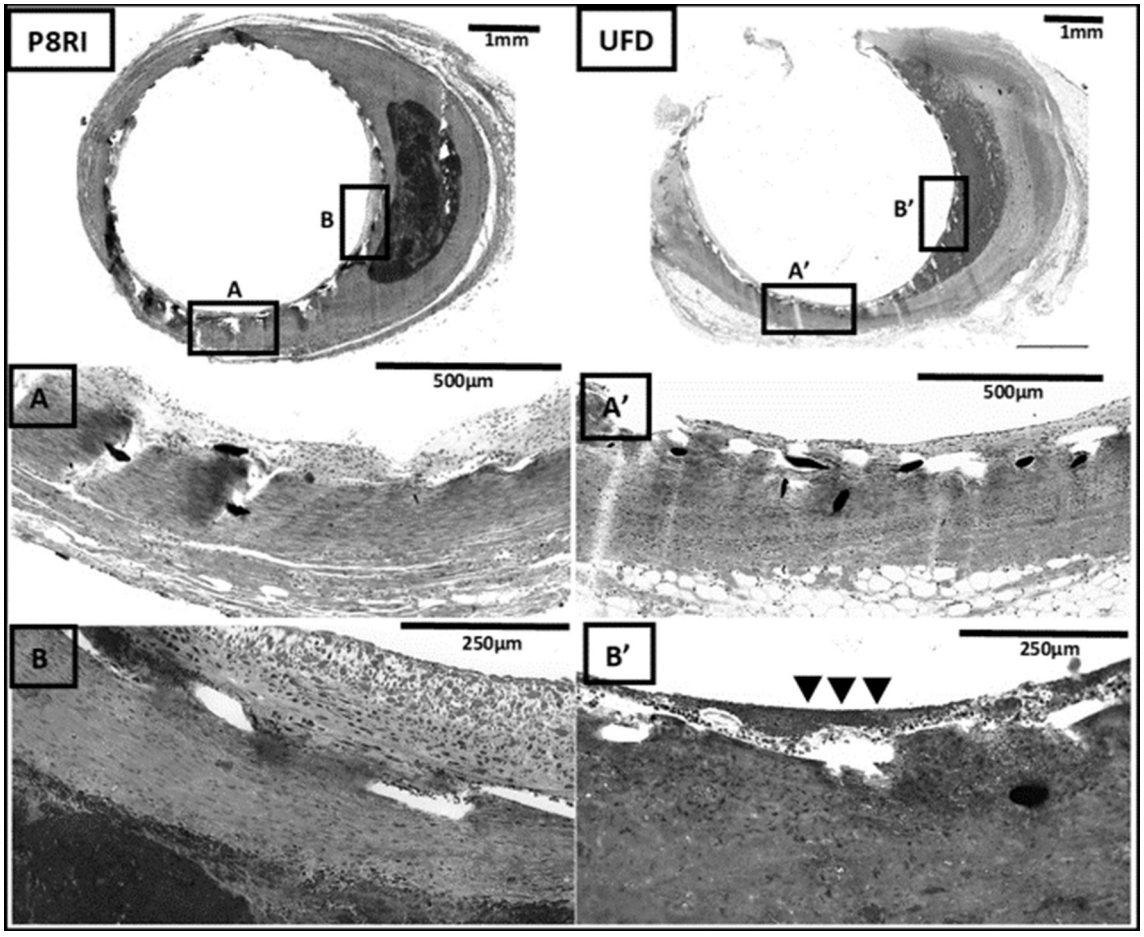

Abstract O-013 Figure 1 Histological sections of implanted Silk Vista Baby® Flow-diverters stained with Masson's trichrome. *Blue*: connective tissue. *Pink*: cytoplasm. *Purple*: nuclei. **Left column/P8RI:** P8RI-coated FD. **Right column/UFD:** bare/unmodified DF. **A, A'**: details of the arterial wall far from the aneurysm. **B, B'**: detail of the neo-tissue surrounding the stent struts in front of the aneurysm. The tissue that covers the struts on the P8RI-coated DF is formed by continuous endothelium and is supported by a normal media rich in smooth muscle cells, contrary to that of the unmodified FD. Moreover, the tissue that covers the stent struts on the bare FD is distinctly disorganized, poor in extra-cellular component such as collagen and discontinuous. The presence of red blood cells indicates haemorrhage in contact with the stent (*black arrow head*)

Introduction The implantation of Flow-Diverter stents (FD) is an effective technic for the treatment of intracranial aneurysms but can expose to severe hemorrhagic and/or ischemic complications due to their metallic structure. CD31 is a trans-membranous protein highly expressed on the luminal surface of arteries and endowed with a contact-driven attractive effect on endothelial cells, and an inhibitory effect of platelets and leucocytes activation. The goal of this study was to evaluate, *in vitro and in vivo*, whether a coating with P8RI, a biomimetic peptide of CD31, could improve the biocompatibility of FD.
Methods The coating of metal pellets and Silk Vista Baby® (Balt, France) FDs with P8RI was obtained via a series of dip-coating steps, including the formation of an intermediate polydopamine (PDA) layer. *In vitro,* the adhesion of endothelial cells under different conditions was tested on uncoated and coated metal pellets (PDA alone and PDA with P8RI), and their thrombogenic and inflammatory phenotype were monitored. *In vivo,* we used a validated elastase-induced saccular carotid aneurysm model in rabbits, separated into three groups: a test group with P8RI-coated FD (P8RI), and two control groups with unmodified FD (UFD) and PDA-coated FD (PDA). Angiographic results were evaluated at 1 and 3 months. Histological, scanning electron and multiphoton microscopy analyses were assessed at 1 month. Patency of covered branches was also evaluated on FD placed in the abdominal aorta covering lumbar arteries.
Results *In vitro,* P8RI coating promotes adhesion of endothelial cells and induces a less inflammatory and less thrombogenic endothelial cell phenotype. *In vivo,* 25 aneurysms were created in 25 rabbits and were treated with 7 UFD, 9 PDA and 9 P8RI FDs. There was no significant difference in complete occlusion rate. Histological and microscopy analyses at 1 month showed that the coating with the P8RI peptide improved the integration of the device at the blood vessel interface and the quality of its endothelialization (figure 1). All covered arteries remained patent with no stenosis in all 3 groups.
Conclusion P8RI coating of FD improves biocompatibility and healing process of aneurysm treatment. These results are a crucial step towards a translation to clinical, this technology could be extended also to other intra-arterial devices used in interventional neuroradiology.
Disclosures J. Cortese: 1; C; Fondation pour la Recherche Médicale (DEA20170637766). **C. Rasser:** None. **G. Even:** None. **C. Choqueux:** None. **S. Bardet:** None. **J. Caroff:** None. **L. Spelle:** None. **G. Caligiuri:** None. **A. Rouchaud:** None.

O-014 DOUBLE STENT-ASSISTED COILING OF INTRACRANIAL ANEURYSMS WITH THE NEUROFORM ATLAS STENT IN Y AND X CONFIGURATIONS: IMMEDIATE AND MIDTERM ANGIOGRAPHIC AND CLINICAL FOLLOW-UP

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Object Self-expandable stents have broadened the spectrum of endovascular treatment of intracranial aneurysms. However procedures involving double stenting in Y or X configuration carry a relatively high risk of procedural complications. The Neuroform ATLAS, the evolution of Neuroform EZ, is a nitinol self-expanding hybrid/open-cell stent, which can be delivered through a low-profile 0.017 inch catheter. We present our experience in the treatment of intracranial aneurysms with this stent in Y and X configuration.
Methods We prospectively maintained a database from consecutive patients who underwent double stent-assisted coiling with Neuroform ATLAS from July 2015 to February 2019. Clinical and angiographic results were analyzed.
Results Fifty-six patients harboring 56 aneurysms were treated with double stenting: 53 'Y' configurations, 3 'X' configurations. Deployment was successful in all but one case of Y stenting, which was prematurely interrupted because of aneurysm perforation. Post-treatment control angiography showed complete occlusion in 33 cases (60%), neck remnant in 8 cases (14.5%) and incomplete occlusion in 14 cases (25.4%). The overall symptomatic peri-procedural complication rate was 14%. The overall morbidity rate was 7.1%. Thirty-seven aneurysms underwent follow-up (66%, mean duration: 16 months): 32 aneurysms (86.4%) were completely occluded, 3 aneurysms (8.1%) had a neck remnant, and 2 aneurysms (5.4%) were incompletely occluded.
Conclusion The Neuroform ATLAS is an effective device for treatment of complex intracranial aneurysms, allowing good conformability, high level of navigability and easy mesh crossing to perform Y or X stenting procedures. The rate of procedural complications remains non negligible, and indication of double-stenting procedure should always be discussed in a multidisciplinary meeting.
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O-015 COMPARISON OF IMAGE QUALITY OF LIQUID EMBOLIC AGENTS

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Introduction Liquid embolic agents (LEAs) play a major role in the treatment of cerebral arteriovenous malformations (AVMs) and dural arteriovenous fistulas (DAVFs). Injection under subtracted fluoroscopy (Blank Road Map, RM) is the preferred technique, especially when using ethylene-vinyl-copolymer based agents. Optimal visual control during injection is crucially important to avoid catheter entrapment or non-target embolization and is strongly dependent on Road Map (RM) quality. Available LEAs differ in their radiopacity the main factor for visual control. We present a comparison study of radiographic visibility of various LEAs using a novel injectable angiographic phantom.
Methods An injectable angiographic phantom was designed with parallel tubings between 313 and 1000 micron. Under RM, eight radiopaque liquid agents were injected: Onyx®18,34 (Medtronic, Dublin, Ireland), SQUID®12,18 (Emboflu, Fribourg, Switzerland), PHIL®25,30 (MicroVention, Tustin, CA, USA), Trufill® (NBCA) (Cordis Neurovascular, Miami, FL, USA) 30% dilution and Omnipaque®300 (GE Healthcare, Chicago, IL, USA). The phantom was imaged using an Artis Zeego system (Siemens Healthineers, Erlangen, Germany) with consistent settings ('RM Glue', RM K40 EA3, 15 p/s). Image analysis was performed with *ImageJ* (NIH, Bethesda, Maryland) and *Matlab* (MathWorks, Inc., Natick, MA). Contrast resolution (CR) was evaluated as a contrast to noise ratio