Abstract O-006 Figure 1 a) CAD rendering of the balloon stent microcatheter device and cross-sectional view (upper right); b) results of a Computational Fluid Dynamic (CFD) simulation rendering velocity streamlines of an ICA aneurysm

derived from Fractional Flow Reserve without induced hyperemia. An FFR, with $a\Delta P < 25\%$ (equivalent to > 0.75 FFR), is a strong indicator of patent artery flow. FFR during balloon-stent deployment was simulated using Computational Fluid Dynamics (figure 1b) and validated using benchtop modeling in a circle of Willis (CW) vessel phantom equipped with real-time branch pressure and flow monitoring.

Results A balloon-stent with a stent ID $> 56\%$ of parent artery ID maintained $\Delta P < 25\%$ during deployment and will minimize ischemic risk. A balloon-stent device can temporarily provide aneurysm neck protection during complementary device deployment while maintaining blood flow in the parent artery. A 2.6F Penumbra Velocity®, jailed next to a balloon-stent device permitted an inflation ID $> 56\%$ of parent artery ID, will maintain $\Delta P < 25\%$ during deployment and will minimize ischemic risk. The prototype maintained safe FFR and parent vessel during in vitro and CFD simulations.

Conclusion A balloon-stent device can provide neuro-interventional surgeons with a larger time-frame to deploy embolic without blood flow arrest and the need for repeated balloon inflation/deflations. In addition, this novel medical device has the potential to provide a smooth surface at the aneurysm neck for consistent device placement, minimize parent vessel trauma, eliminate ischemic effects distal to the parent artery, and minimize intra-saccular flow remnants pre- and post-treatment. Prototyping work on the balloon-stent device is currently underway.

Disclosures O. Asgari: 1; C; the 2021 Flinn Foundation Medical Technology Seed Grant. H. Berns: None. A. Arzani: None. T. Becker: None.

O-007

LENGTH OF HOSPITAL STAY IN ANEURYSMAL SUBARACHNOID HEMORRHAGE PATIENTS WITHOUT VASOSPASM ON ANGIOGRAPHY: POTENTIAL FOR A FAST-TRACK DISCHARGE COHORT

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10.1136/neurintsurg-2021-SNIS.7

Background Aneurysmal subarachnoid hemorrhage (aSAH) patients frequently suffer from vasospasm. We analyzed the

association between absence of early angiographic vasospasm and early discharge.

Methods All treated aSAH patients (August 1, 2007-July 31, 2019) at a single tertiary center were reviewed. Patients undergoing diagnostic digital subtraction angiography (DSA) on post-aSAH days 5 to 7 were included in the analysis; cohorts with and without angiographic vasospasm (angiographic reports by attending neurovascular surgeons) were compared. Primary outcome was hospital length of stay; secondary outcomes were ICU length of stay, 30-day return to the emergency department (ED) and poor neurologic outcome, defined as a modified Rankin Score (mRS) score >2 .

Results A total of 298 patients underwent DSA on post-aSAH day 5, 6, or 7. Most patients ($n=188$, 63%) had angiographic vasospasm, whereas 110 patients (37%) did not. The no-vasospasm cohort had a significantly lower mean length of hospital stay (18.0 ± 7.1 days) than the vasospasm group (22.4 ± 8.6 days) ($p < 0.001$). The 2 cohorts did not differ significantly in the percentage of patients with mRS scores >2 at last follow-up or those returning to the ED before 30 days. After adjustment for Hunt and Hess scores, Fisher grade, admission Glasgow Coma Scale score, and age, logistic regression analysis

Abstract O-007 Table 1 Characteristics of patients with aSAH with and without angiographic vasospasm*

Characteristic	No Vasospasm (n=110)	Vasospasm (n=188)	P-value
Age (yr)	58.6 (12.9)	53.1 (12.2)	<0.001
GCS on admission	11.9 (3.8)	10.9 (3.8)	0.02
mRS at last follow-up	2.5 (2.0)	3.1 (2.0)	0.01
Hunt and Hess grade	2.8 (1.1)	3.1 (1.1)	0.01
Fisher grade	3.7 (0.7)	3.7 (0.6)	0.36
Aneurysm size (mm)	7.0 (4.2)	6.5 (4.4)	0.36
Total hospital stay (days)	18.0 (7.1)	22.4 (8.6)	<0.001
Last follow-up (days)	835.4 (1335.6)	834.6 (1319.0)	0.99
Open surgical clipping, n (%)	55 (50)	122 (65)	0.01
VPS, n (%)	26 (24)	51 (27)	0.58
DSA complication, n (%)	3 (3)	7 (4)	0.64

Data are presented as mean (SD) unless otherwise indicated.

*Angiographic vasospasm is defined on the basis of DSA on post-aSAH days 5–7.

Abbreviations: aSAH, aneurysmal subarachnoid hemorrhage; DSA, digital subtraction angiography; GCS, Glasgow Coma Scale; mRS, modified Rankin Scale, VPS, ventriculoperitoneal shunt

Abstract O-007 Table 2 Outcomes of patients with aSAH with and without angiographic vasospasm*

Characteristic	No Vasospasm (n=110) n (%)	Vasospasm (n=188) n (%)	P-value
Hospital discharge $\leq$ post-aSAH day 14	37 (34)	22 (12)	<0.001
mRS score > 2 at last follow-up	51 (46)	106 (56)	0.12
mRS score > 2 at last follow-up with at least 6 months of follow-up	12 (26)	21 (27)	0.86
Return to the ED within 30 days of discharge	13 (12)	30 (16)	0.39

*Angiographic vasospasm defined on the basis of digital subtraction angiography on post-aSAH day 5-7.

Abbreviations: aSAH, aneurysmal subarachnoid hemorrhage; ED, emergency department; mRS, modified Rankin Scale

Abstract O-007 Table 3 Characteristics associated with prolonged length of stay in patients with aSAH who underwent postoperative day 5-7 angiography

Characteristic	LOS $\leq$ 14 days (n=59) n (%)*	LOS>14 days (n=298) n (%)*	P-value
Age, mean (SD), yr	58.0 (13.7)	54.4 (12.4)	0.054
Preexisting comorbidities			
Cardiovascular disease	12 (20)	54 (18)	0.68
Cirrhosis	1 (2)	2 (0.7)	0.55
Diabetes	3 (5)	42 (14)	0.057
Hypertension	42 (71)	235 (79)	0.46
GCS score on admission, mean (SD)	12.8 (3.7)	10.9 (3.8)	0.001
Hunt and Hess grade, mean (SD)	2.6 (1.1)	3.1 (1.0)	0.002
Fisher grade, mean (SD)	3.6 (0.8)	3.7 (0.6)	0.16
Open surgical clipping	35 (59)	177 (59)	0.99
Angiographic vasospasm	22 (37)	207 (69)	< 0.001

*Data are presented as number (percentage) unless otherwise indicated.

Abbreviations: aSAH, aneurysmal subarachnoid hemorrhage; GCS, Glasgow Coma Scale; LOS, length of stay

showed that absence of vasospasm on post-aSAH day 5-7 predicted discharge on or before hospital day 14 (OR 3.4, 95% CI 1.8-6.4, $p<0.001$).

Conclusion Lack of angiographic vasospasm 5 to 7 days after aSAH is associated with shorter hospitalizations, with no increase in 30-day ED visits or poor neurologic outcome.

Disclosures J. Catapano: None. V. Srinivasan: None. K. Rumalla: None. M. Labib: None. C. Nguyen: None. T. Cole: None. J. Baranoski: None. C. Rutledge: None. R. Rahmani: None. M. Lawton: None. A. Ducruet: None. F. Albuquerque: None.

O-008

ENDOVASCULAR EMBOLIZATION VS. SURGERY FOR RUPTURED INTRACRANIAL ANEURYSMS: A PROPENSITY-MATCHED STUDY OF 2,740 PATIENTS IN THE TRINETX ANALYTICS NETWORK

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10.1136/neurintsurg-2021-SNIS.8

Background Endovascular embolization (e.g. coiling) and surgery (i.e. clipping) are both treatment strategies for ruptured intracranial aneurysms. Endovascular treatment for ruptured