derived from Fractional Flow Reserve without induced hypere
mia. An FPR, with \( \text{a}\%\Delta < 25\% \) (equivalent to \( \text{a} \text{FPR} \)), is a strong indicator of patent artery flow. FPR during
balloon-stent deployment was simulated using Computational
Fluid Dynamics (figure 1b) and validated using benchtop mod-
ing 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 \( \text{a}\%\Delta < 25\% \) 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 \( \text{a}\%\Delta < 25\% \) during deployment and will
minimize ischemic risk. The prototype maintained safe FPR
and parent vessel during in vitro and CFD simulations.

**Conclusion**
A balloon-stent device can provide neuro-interven-
tional 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 cur-
rently underway.

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**O-007**

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

J. Catapano*, V. Srinivasan, K. Rumalla, M. Labib, C. Nguyen, T. Cole, J. Baranowski,
C. Rutledge, R. Rahmani, M. Lavtron, A. Dutkew, F. Albuquerque. Neurosurgery, BNI, Phoenix,
AZ

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**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 angiogra-
phy (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 neuro-
logic 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-vaso-
spasm cohort had a significantly lower mean length of hospi-
tal stay \( (18.0\pm7.1 \text{ days}) \) than the vasospasm group \( (22.4\pm8.6
\text{ days}) \) \( (p<0.001) \). 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 adjust-
ment for Hunt and Hess scores, Fisher grade, admission Glas-
gow Coma Scale score, and age, logistic regression analysis

**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

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**Table 1**

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

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, ventriculo-peritoneal shunt.
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.


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

1A Na*, 1R Lall, 1P Kan, 1V Srinivasan, 1University of Texas Medical Branch, Galveston, TX; 2Barrow Neurological Institute, Phoenix, AZ

Background Endovascular embolization (e.g. coiling) and surgery (i.e. clipping) are both treatment strategies for ruptured intracranial aneurysms. Endovascular treatment for ruptured intracranial aneurysms is a non-surgical option that involves the placement of a metal coil to occlude the aneurysm neck and prevent subsequent recurrence.