Supplemental material

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SUPPLEMENTAL MATERIAL (SUPPLEMENTAL TABLES 1 – 4)

Supplemental Table 1 – Predictive Analysis, Periprocedural Aneurysm Rupture/Re-rupture or Perforation (N = 781, with 25 events)

Outcome: Periprocedural Aneurysm Rupture/Re-Rupture or Perforation	
	Odds Ratio [95% Confidence Interval]
Multivariate Model using stepwise selection	
Adjunctive device used: Balloon Assist vs. Coils Only	6.92 [2.15, 22. 28] *
Adjunctive device used: Stent Assist vs. Coils Only	2.92 [0.90,9.49]
Packing Density (per 5% increase)	1.09 [1.01,1.17] *
Univariate Models	
Aneurysm Size: Greater or equal to 4mm vs <4mm (Very Small)	0.53 [0.22,1.29]
Aneurysm Location: Anterior Communicating	1.76 [0.78,3.97]
Ruptured vs Unruptured	1.27 [0.55,2.92]
Neck width ≥4mm	0.46 [0.16,1.35]
Wide Neck[δ]	0.62 [0.28,1.38]
Weekend	1.93 [0.56,6.65]
Adjunctive device used: Balloon Assist vs. Coils Only	6.93 [2.17,22.15] *
Adjunctive device used: Stent Assist vs. Coils Only	2.8 [0.87,9.01]
Packing Density (per 5% increase)	1.08 [1.01, 1.16]*

Recurrent saccular aneurysms are excluded from these models

*Significant at alpha=0.05

[δ]Wide neck defined as aneurysms with a dome to neck ratio of <2 or neck width ≥ 4mm

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Supplemental Table 2 – Predictive Analysis, Periprocedural Thromboembolic Event (N = 795, with 41 events)

Outcome: Periprocedural Thromboembolic event	
	Odds Ratio [95% Confidence Interval]
Multivariate Model using stepwise selection	
Aneurysm Location: Bifurcation‡	2.08 [1.07, 4.05]*
Ruptured Aneurysm	2.32 [1.23, 4.38]*
Univariate Models	
Aneurysm Size: Large-Giant vs. Small-Medium	1.44 [0.6,3.41]
Aneurysm Size: Very Small vs. Small-Medium	1.46 [0.67,3.2]
Aneurysm Location: Bifurcation‡	2.04 [1.06,3.96] *
Ruptured vs Unruptured	2.28 [1.21,4.29] *
Neck width ≥4mm	0.99 [0.5,1.98]
Weekend	1.56 [0.53,4.54]
Adjunctive device used: Balloon Assist vs. Coils Only	1.05 [0.44,2.47]
Adjunctive device used: Stent Assist** vs. Coils Only	0.87 [0.43,1.75]
Age (per 10 year increase)	0.86 [0.67,1.10]

*Significant at alpha=0.05

‡Bifurcation locations are defined as ICA terminus, MCA bifurcation, Anterior Communicating Artery, and Basilar Artery bifurcation

** Stent-assisted category includes flow diverters.

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Supplemental Table 3 – Predictive Analysis, Periprocedural procedure-or-device-related Adverse Events (N = 795; 139 with procedure or device related AEs)

Outcome: Periprocedural procedure- or device- related adverse events	
	Odds Ratio [95% Confidence Interval]
Multivariate Model using stepwise selection	
Aneurysm Location: Bifurcation‡	1.82 [1.24, 2.65]*
Adjunctive device used: Balloon Assist vs. Coils Only	1.86 [1.10, 3.15]*
Adjunctive device used: Stent Assist** vs. Coils Only	1.79 [1.18, 2.73]*
Univariate Models	
Aneurysm Size: Large-Giant vs. Small-Medium	0.69 [0.38,1.25]
Aneurysm Size: Very Small vs. Small-Medium	1.18 [0.74,1.89]
Aneurysm Location: Distalφ	1.47 [1.00,2.17]
Aneurysm Location: Bifurcation‡	1.78 [1.22,2.58] *
Ruptured vs. Unruptured	0.73 [0.48,1.11]
Neck width ≥4mm	0.92 [0.61,1.38]
Weekend	1.26 [0.63,2.51]
Adjunctive device used: Balloon Assist vs. Coils Only	1.74 [1.03,2.92] *
Adjunctive device used: Stent Assist** vs. Coils Only	1.8 [1.18,2.73] *
Age (per 10 year increase)	1.10 [0.95, 1.27]
Packing density (per 5% increase)	1.02 [0.97, 1.07]

Recurrent saccular aneurysms are excluded from these models

* Significant at alpha = 0.05

‡Bifurcation locations are defined as ICA terminus, MCA bifurcation, Anterior Communicating Artery, and Basilar Artery bifurcation

φDistal locations are defined as aneurysms located in the Anterior Communicating Artery or located distal to the Middle Cerebral Artery (MCA) bifurcation

** Stent-assisted category includes flow diverters.

Supplemental Table 4: Periprocedural Safety in aneurysm patients based on adjunctive technique used

	Seriousness	Coils Only			Stent-Assisted*			Balloon-Assisted		
		Total	Ruptured	Un-ruptured	Total	Ruptured	Un-ruptured	Total	Ruptured	Un-ruptured
Access Site Complications % (n/N)	Not Serious	2.7% (10/368)	0.6% (1/160)	4.3% (9/208)	4.1% (13/320)	0.0% (0/21)	4.3% (13/299)	0.0% (0/148)	0.0% (0/82)	0.0% (0/66)
	Serious	0.0% (0/368)	0.0% (0/160)	0.0% (0/208)	0.6% (2/320)	0.0% (0/21)	0.7% (2/299)	0.0% (0/148)	0.0% (0/82)	0.0% (0/66)
	Total	2.7% (10/368)	0.6% (1/160)	4.3% (9/208)	4.7% (15/320)	0.0% (0/21)	5.0% (15/299)	0.0% (0/148)	0.0% (0/82)	0.0% (0/66)
Aneurysm Rupture/Re-rupture or Perforation %, (n/N)	Not Serious	0.5% (2/368)	0.6% (1/160)	0.5% (1/208)	0.6% (2/320)	0.0% (0/21)	0.7% (2/299)	2.7% (4/148)	3.7% (3/82)	1.5% (1/66)
	Serious	0.5% (2/368)	0.6% (1/160)	0.5% (1/208)	2.5% (8/320)	0.0% (0/21)	2.7% (8/299)	4.7% (7/148)	4.9% (4/82)	4.5% (3/66)
	Total	1.1% (4/368)	1.3% (2/160)	1.0% (2/208)	3.1% (10/320)	0.0% (0/21)	3.3% (10/299)	7.4% (11/148)	8.5% (7/82)	6.1% (4/66)
Dissection, %, (n/N)	Not Serious	0.0% (0/368)	0.0% (0/160)	0.0% (0/208)	0.3% (1/320)	0.0% (0/21)	0.3% (1/299)	0.0% (0/148)	0.0 (0/82)	0.0% (0/66)
	Serious	0.3% (1/368)	0.0% (0/160)	0.5% (1/208)	0.3% (1/320)	0.0% (0/21)	0.3% (1/299)	0.7% (1/148)	0.0 (0/82)	1.5% (1/66)
	Total	0.3% (1/368)	0.0% (0/160)	0.5% (1/208)	0.6% (2/320)	0.0% (0/21)	0.7% (2/299)	0.7% (1/148)	0.0 (0/82)	1.5% (1/66)
Thromboembolic Events*, % (n/N)	Not Serious	1.6% (6/368)	1.9% (3/160)	1.4% (3/208)	1.5% (5/335)	4.5% (1/22)	1.3% (4/313)	4.1% (6/148)	4.9% (4/82)	3.0% (2/66)
	Serious	3.5% (13/368)	6.3% (10/160)	1.4% (3/208)	3.3% (11/335)	9.1% (2/22)	2.9% (9/313)	1.4% (2/148)	2.4% (2/82)	0.0% (0/66)
	Total	5.2% (19/368)	8.1% (13/160)	2.9% (6/208)	4.8% (16/335)	13.6% (3/22)	4.2% (13/313)	5.4% (8/148)	7.3% (6/82)	3.0% (2/66)

*Cases involving both balloon- and stent-assisted are included under the stent-assisted category

**For thromboembolic events, cases involving flow diverters are included under the stent-assisted category