

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 \geq 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

^δWide neck defined as aneurysms with a dome to neck ratio of <2 or neck width \geq 4mm

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.

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: Distal ^ϕ	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