

# Extended Aortic Coverage in Thoracic Aortic Endovascular Repair is not associated with Spinal Cord Ischemia

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## Background

Extended aortic coverage in thoracic endovascular repair (TEVAR) has been postulated as a risk factor for spinal cord ischemia, however the data is unclear.

## Objective

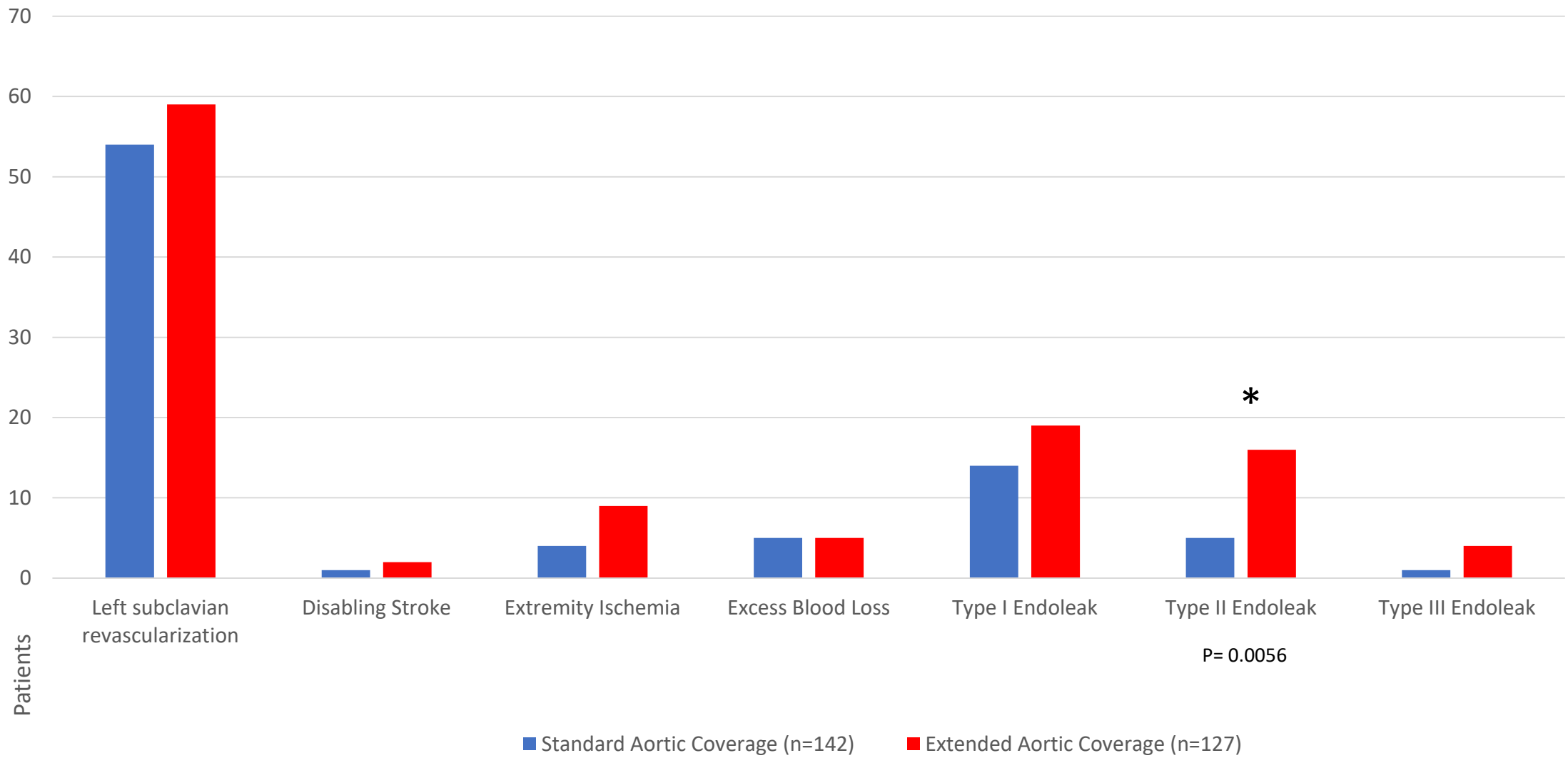
To evaluate outcomes of spinal cord ischemia in TEVAR patients with extended aortic length coverage versus standard aortic length.

## Methods

- Single-center, retrospective study
- All TEVARs (n=269) from 2006 to 2021
- Extended Aortic Coverage (>205mm)(n=127)
- Standard Aortic Coverage (<205mm) (n=142)
- Spinal cord ischemia, Endoleak, and other postoperative outcomes
- Sub-analysis for Type B dissection and descending thoracic aortic aneurysm
- Univariable logistic regression for Spinal Cord Ischemia

# Baseline Characteristics

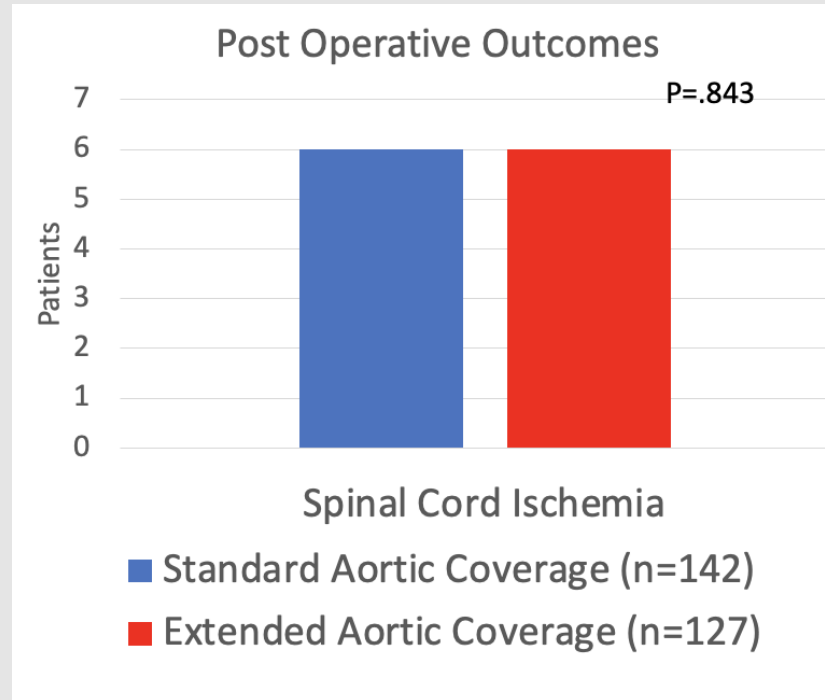
	Standard Coverage	Extended Coverage	P-Value
Age	70.00 (57.00-78.00)	71.00 (62.00-79.00)	0.4662
Female	59 (41.55%)	58 (45.67%)	0.4962
Diabetes Mellitus	10 (7.04%)	17 (13.39%)	0.0839
HTN	104 (73.24%)	97 (76.38%)	0.5543
Ischemic Heart Disease	28 (19.72%)	20 (15.75%)	0.3959
Smoking	56 (39.44%)	74 (58.27%)	0.0020
CKD	12 (8.45%)	16 (12.60%)	0.2661
Previous Stroke	5 (3.52%)	13 (10.24%)	0.0278
Pre-operative Lumbar Drain	28 (19.72%)	45 (35.43%)	0.0038
Previous Cardiac Surgery	49 (34.51%)	38 (29.92%)	0.4222
Aortic diameter (mm)	49.00 (39.00-61.00)	52.50 (42.50-65.50)	0.0743



## Post Operative Outcomes

# Spinal Cord Ischemia

- 12 patients in the cohort developed post-operative SCI.
- 6 of which were dissections, and 6 were aneurysms.
- 4 of these patients had pre-operative lumbar drains.
- Salvage lumbar drains were only successful in 35% of patient in resolving neurological deficits.



# Type B Dissection Sub-analysis

	Standard Coverage	Extended Coverage	P-Value
Descending Thoracic Aneurysm (n=128)	67 (66.62%)	61 (61.38%)	0.3552
Urgency	34 (23.94%)	45 (35.43%)	0.0389
Previous EVAR	3 (2.11%)	1 (0.79%)	0.6245
Rapid Growth (>10mm/yr)	13 (9.15%)	30 (23.62%)	0.0012



# Descending Thoracic Aortic Aneurysm Sub-analysis

	Standard Coverage	Extended Coverage	P-Value
<b>Type B Dissections</b> (n=141)	73 (73.38%)	68 (67.62%)	0.8894
<b>Previous OMT</b>	25 (17.61%)	28 (22.05%)	0.3605
<b>Chronicity</b>			
<b>Acute</b>	39 (17.02%)	45 (21.27%)	>0.05
<b>Chronic</b>	28 (16.31%)	29 (15.60%)	>0.05
<b>Complicated</b> (malperfusion rupture, etc.)	51 (35.92%)	56 (44.09%)	0.4188

# Univariable Logistical Regression for SCI

Effect	Odds Ratio	95% Confidence Limits		p-Value
Extended Aortic Coverage ( $\geq 205\text{mm}$ )	1.124	0.353	3.577	0.843
Females	0.925	0.286	2.991	0.896
Diabetes Mellitus	0.858	0.106	6.972	0.886
Hypertension	1.383	0.291	6.579	0.684
Ischemic Heart Disease	1.700	0.434	6.661	0.446
Previous EVAR	8.433	0.804	88.402	0.075
Left Subclavian Revascularization	0.442	0.117	1.673	0.229
Dissection	0.261	0.069	0.987	0.048
Previous OMT	0.338	0.042	2.729	0.309
Acute Dissection	0.729	0.150	3.554	0.696
Chronic Dissection	0.547	0.066	4.529	0.576
Complicated Dissection (malperfusion rupture, etc.)	0.994	0.307	3.222	0.993
Aneurysm	3.119	0.825	11.783	0.094
Urgency	1.766	0.543	5.743	0.344

## Conclusion

Extended aortic coverage (compared with the standard approach) was not associated with higher risk of spinal cord ischemia; however, this may have been mitigated by this population's higher prevalence of prophylactic lumbar drainage.