Endovascular repair: how to minimize post operative risk

Tim Resch Vascular Center Skåne University Hospital Sweden Critical Steps to Prevent Postop Complications after eTAAA Repair

- Patient Selection
- Patient Workup/Optimization
- Stentgraft Planning
- Critical Procedural Steps
- Postoperative Management

Patient Selection

- Aneurysm Size
- Previous Aortic Surgery

 Spinal ischemia
- Cardiovascular Status
- Renal Function
- Pulmonary function

Patient Workup/Optimization

- Cardiac Workup
 - Stress testing is not predictive of myocardial ischemia/infarction (MI) or death in most pts
 - Lee Cardiac Index



- High risk Surgery, IHD, CHF, CVD, IDDM, RF, HT, >75y
- ->3 risk factors or active cardiac disease
 - Undergo stress testing if VS can be delayed

Patient Workup/Optimization

- Medication
 - Betablockers > 30d preop (SBP ≤120mmHg)
 - Statins > 30d preop
 - decreases MI, stroke, and death perioperatively and long-term postoperatively.
 - Platetet inhibitor
 - Coronary stents

Bauer S. J Vasc Surg. 2010 Jan;51(1):242-51

"Say what's a mountain goat doing way up here in a cloud bank?"



- Preoperative 3D Imaging is critical
- Properly timed contrast bolus
- High-resolution reconstruction
 - Z-plane resolution
- Understanding of device deployment



Access Evaluation

- Evaluate Access Preoperatively —CTA, MRA
- Choose Appropriate Device
- Plan for adjunctive steps

Faciliatated Access

- Stiff Wires
- Dilatators
- PTA
- Through wires
- Crack and Pave
- Iliac conduit



Graft planning

- When use fen/branch?
 - Proximal landing zone
 - Distal landing zone
 - Ability to incorporate branches
 - Adequate access vessels
 - Anatomy of Target vessels



Branch Design











Branches Versus Fenestrations

Clearly Branch



Clearly In-between







Branch – Aortic Geometric Interface Crainocaudal Ant-Post



Type IV TAA



Type II/III TAA









ZENITH [~] AAA ENDOVASCULAR GRAFT WORK SHEET	32 31
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- Stage the Procedure
 - Extraanatomic bypasses
 - Endograft procedure
- Revascularize spinal cord collaterals
 - LSA, Hypogastrics



EUROSTAR 2007

Table IV. Multivariate regression analysis for paraplegia

Risk factor	P value, paraplegia (n = 15)	OR (95% CI)
Degenerative aneurysm	.1406	2.75 (.72-10.6)
Localization disease at proximal, middle, and descending thoracic aorea	.4866	.54 (.10-3.03)
Number of stent grafts ≥ 3	.0428	3.49 (1.04-11.7)
Left subclavian artery covering without transposition/bypass	.0274	3.94 (1.17-13.3)
Occlusion by device T10	.2474	2.07 (.60-7.11)
Renal failure (score ≥ 1)*	.0215	3.63 (1.21-10.9)
Concomitant open abdominal surgery	.0371	5.52 (1.11-27.5)

Multivariate Analysis: Paraplegia Risk						
Aortic Morphology	SR (n=372)		ER (n=352)			
	OR	95% CI	OR	95% CI		
I vs. 0	26.5	2.9-242.1	20	2.2-181.3		
II vs. 0	38.8	4.8-317.4	14.1	1.1-188.6		
III vs. 0	14.3	1.5-133.6	2.6	0.1-54.8		
IV vs. 0	1.8	0.1-32.5	2.6	0.2-35.8		
Chronic Dissection	1.3	0.5-3.7	0.0009	*		
Tid Proximalt Proc	Hypogastric flow is more important for spinal perfusion when ic are not reimplanted					
Occlusion	1.8	0.6-5.6	3	0.8-1.2		

- Check Your ancillaries!!
 Backup stents/graft/wires
 - Backup stents/graft/wire
- Put in a Spinal Drain
- Talk to your Anesthesiologist/ICU
- Check Your Graft!

- Keep Patient well Heparinized (ACT>300)
- Place ALL Endografts first then close the groins
 - Avoid LE reperfusion issues
 - With long (3hours) fenestrated cases consider LE shunt
 - Make sure your groin closure works!
 - Avoid percutaneous procedures

- Reinforce and transition mating stents appropriately
 - SE stents
 - BE stents
 - Final DynaCT excellent to determine stent configuration

Postoperative Management

Maintain MAP > 80

Spinal perfusion pressure

- Early wake up test
- If Spinal Drain fails place another
- Caution during dialysis

Summary

- Choose the right patient
- Prepare the patient correctly
- Get good imaging
- Choose and plan the correct SG
- Stick to the plan

