DEBATE:
Not So: Parallel Grafts With Standard EVAR Endografts Are The Best Treatment For Most Juxta-And Pararenal AAAs

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- Off Label use of devices

2008-2016
• Referral patterns changed
• More devices available and improving
• IRB approved protocol for complex EVAR
  – 83 juxtarenal snorkel cases (2009-current)
  – 91 commercial fenestrated (2012-current)
  – 20 double barrel sandwich (internal iliac) (2009-2011)
  – 37 iliac branch (12 in trials) (2012-current)
  – 32 periscope/branch/octopus TEVAR (2010-current)
  – 7 homemade fenestrated/branched (2008-2009)

Snorkel graft/chimney
• Parallel graft alongside the main aortic endoprosthesis to maintain flow in a covered branch vessel.

Self-expanding bare metal stents
Effectively raise renal orifice a few mm
Ensure graft material in region of renals without compromising renal flow

Vehicle Surgery
Early experience with the snorkel technique for juxtarenal aneurysms

83 consecutive patients (2009-current)
Covered stents, purposeful chimney/snorkel strategy as opposed to bail out
IRB approved protocol
98% technical success
2.2% 30-day mortality
96% primary patency (mean 34 months, 3-70)
Survival 89% at one year, 83% at 2 years

What are the Concerns?
• Lack of numbers
• Gutters
• Renal patency
• 2nd interventions
• Renal function

Gutters

The Best Conditions for Parallel Sizing during EVAR: An In Vitro Study

Renal Patency
• 96% overall primary patency at mean 34 months (3-70)
  • 6 occluded renals
    • 1 post op (rescued)
    • 1 at 1 month flu (asymptomatic)
  • 2 at 3 months (1 during abdominal operation, rescued)
  • 1 at 6 month flu (asymptomatic)
  • 1 at 2 year flu (rescued)
  • 98% secondary patency
• 2nd interventions (6.0%)
  • 1 Type 3 endoleak
  • 1 Type 1 endoleak
  • 3 rescued renals

517 patients with 898 parallel grafts
  • 692 renal arteries, 156 SMAs, 50 celiacs
  • 94% patency
  • 5.7% Type I endoleak
  • 2-year survival 79%
Long term concerns-Renal Function

Renal function changes after stent graft/chimney repair of juxtarenal aneurysms

- How does it compare?

Technical factors are strongest predictors of postoperative renal dysfunction after open transperitoneal juxtarenal abdominal aortic aneurysm repair

Open JAAA
- **RIFLE**: 37.3% overall acute renal dysfunction, 4.1% dialysis
- Of these, 55.6% lowest level (25-50% GFR decline)

Ch-EVAR
- **RIFLE**: 32.6% overall acute renal dysfunction, 2.3% dialysis
- Of these, 71.4% lowest level

*Defined newly acquired renal insufficiency as increase in serum creatinine >0.5 and serum creatinine >1.5

Open JAAA (46 month f/u)
- 8.5% incidence perioperative, 2% dialysis
- 19% of patients at latest follow up, 4.8% dialysis

Ch–EVAR (21 month f/u)
- 9.1% incidence perioperative, 2.3% dialysis
- 23% of patients at latest follow up, 0% dialysis

*Defined newly acquired renal insufficiency as increase in serum creatinine >0.5 and serum creatinine >1.5
Comparison of the effects of open and endovascular aortic aneurysm repair on long-term renal function using chronic kidney disease staging based on glomerular filtration rate

Joseph L. Mitha, MD, Jee Y. Chung, MD, James S. Dunn, MD, Ahn H. Lee, MD, Rene J. Santos, MD, E. David R. Martin, MD, FACS, Fassoc, FASA, FES, FEB, FEB, Dendr. Eng, FASA, FESS, FEB, FEB, Dendr. Eng, FASA, FESS, FEB, FEB

Open+EVAR Infrarenal AAA repair

VASCULAR SURGERY

Open+EVAR Infrarenal AAA repair

Ch-EVAR

FEVAR (15-25 month f/u)
- 22.2% incidence renal dysfunction
- 93.2% branch vessel patency

Ch-EVAR (21 month f/u)
- 29.7% incidence of renal dysfunction
- 95% branch vessel patency

PARARENAL AORTIC ANEURYSM REPAIR USING FENESTRATED ENDOLUMINAL GRAFTS


*Defined as transient or permanent increase in creatinine >2 or 30% increase versus baseline

FEVAR (15-25 month f/u):
- 22.2% incidence renal dysfunction
- 93.2% branch vessel patency

Ch-EVAR (21 month f/u):
- 29.7% incidence of renal dysfunction
- 95% branch vessel patency

TRANS-ATLANTIC DEBATE

Thomas L. Forbes, MD, and A. Ron Nyhan, MD, FACR, NA, FAS, Section Editor

Debate: Whether branched/fenestrated endovascular aneurysm repair procedures are better than snorkels, chimneys, or periscopes in the treatment of most thoracoabdominal and juxtarenal aneurysms

Adrian Hiddessen, MD, Stephen Hazelton, MD, PhD, and Jamie E. Lee, MD, *Cilea, France, and Stanford, Calif.

Vascular surgeons in an innovative group, working the last decades, have seen and implemented advances in the endovascular treatment of complex arterial aneurysmal disease. Advances in the repair of renovascular and infrarenal native aneurysms have been limited by the need for anatomic complexity, a general lack of new devices, and the high cost of treatment. In the current landscape, we have seen a surge in the use of novel procedures and devices that include branched and fenestrated endoluminal grafts. These new techniques offer various advantages over current endoluminal approaches. The debate is whether these advances are superior to current endoluminal approaches in the repair of complex aneurysms. (J Vasc Surg 2012;56:860-66.)

How about now that ZFEN is approved?

Approved
July 2012

First case
September 2012

ENDOVASCULAR JUXTARENAL AAA 2010-2016

83 snorkel, 91 ZFEN

ENDOVASCULAR JUXTARENAL AAA 2010-2016

36 Snorkel
91 ZFEN
Summary

• On-label use of ZFEN if feasible
  • Low threshold for snorkel/chimney strategy
  • Neck angulation distorts renal fenestration and SMA scallop planning
  • Anatomic limitations of SMA/renal distance
• Wait time - need off the shelf strategies
• Renal takeoff angulation adds to difficulty
• Iliac access
• SNORKEL/CHIMNEY APPROACH WORKS WELL FOR MOST SHORT NECK EVAR WITH OFF THE SHELF DEVICES