Open, Ch/EVAR, F/EVAR, and Combinations all have a role in Treating Short and No-neck AAAs

Jason T. Lee MD
Division of Vascular Surgery
Stanford University
Stanford, CA

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Complex AAA
- Type IV thoracoabdominal
- Suprarenal
- Challenging proximal neck anatomy:
  - Juxtarenal (<5mm neck length)
  - Infrarenal with >60 degree angulation
  - Significant pararenal thrombus burden

Medium /High Physiologic Risk
- f-EVAR
- Ch-EVAR
  - High-risk only
  - Urgent/emergent repair
  - Significant physiological renal angulation
  - Unintentional renal artery coverage

Low Physiologic Risk
- Open surgical repair

Early experience with the snorkel technique for pararenal aneurysms
- STANFORD SERIES UPDATED
  - 104 consecutive patients (2009-current)
  - Covered stents, purposeful chimney/snorkel strategy as opposed to bail out
  - IRB approved protocol
  - 98% technical success
  - 2.4% 30-day mortality
  - 95% primary patency (mean 42 months, 3-90)
  - Survival 89% at one year, 83% at 2 years

Long term concerns FOR snorkel/chimney
- Renal patency
- 2nd interventions
- Renal function
- Migration/kinking
- Arch issues

Selected Work Experience about the Performance of the Snorkel/Chimney Endovascular Technique in the Treatment of Complex Abdominal Aortic Aneurysms
- April 2016

- 517 patients with 898 parallel grafts
  - 662 renal arteries, 156 SMAs, 50 celiacs
  - 84% patency
  - 5.7% Type I endoleak
  - 2-year survival 79%
Fenestrated EVAR- Cook ZFEN

Approved July 2012

ZFEN 001

Juxtarenal AAA 2010-current
104 snorkel, 159 ZFEN

ZFEN 123
Now that we have extensive experience with both:
How do we choose?

- Concepts are still similar
  - Good iliac access vessels
  - Able to place target branches
  - Adequate sealing zone

Access limitations -
Iliac conduits - need 20F for FEVAR

Renal Cannulation Angles

The rate limiting step
- Time to complete the procedure
- Overall procedural success

In contrast to Ch-EVAR
Downward angulation - most challenging for F-EVAR

In contrast to Sn-EVAR
Downward angulation - most challenging

How to choose between Ch-EVAR and F-EVAR
Maybe the renals will answer?

When do we combine strategies?
Infrarenal and Suprarenal Neck Angulations
When do we combine strategies?
Infrarenal and Suprarenal Neck Angulations

77 yo male 9.3 cm AAA
- Double angle with crossover renal
- SMA at same level as R renal and very close to L renal

4 year F/U

75 yo female 6.6 cm AAA
Ulcer at juxtarenal neck
SMA lower than highest renal

Fewer chimneys better?
Want to limit chimneys if possible.

Perhaps fenestrated and parallel are complementary strategies!

1 year followup

2 year followup

PEVAR With Chorionic Grafting (PEVAR-ch) Produces Equivalent Outcomes To Standard PEVAR.

Michael D. Spal, MD, C. Dhakshinamoorthy, MD, Ganesan Udai, MD, Kenneth Tran, MD, Jesse T. Lee, MD

Stanford University, Stanford, CA, USA.

Abstract

Objectives: To compare outcomes of planned chimney use with fenestrated endovascular stent-graft (PEVAR-ch) to standard PEVAR for chronic type B aneurysm repair.

Methods: A single-center retrospective review of all patients that underwent fenestrated endovascular repair between 2012 and 2015. Clinical and perioperative outcomes were segregated among patients undergoing PEVAR-ch with or without chimney grafts.

Results: 17 patients were enrolled. 7 patients were in PEVAR-ch with chimney grafts, and the PEVAR group included 10 patients. Overall, 100% patients had patent fenestrations at 1 year (log-rank test, p = 0.67). There were no differences in technical success, freedom from aneurysm growth, or freedom from aneurysm rupture at 1 year between the 2 groups.

Conclusions: PEVAR-ch with chimney grafting is feasible and appears to be associated with similar outcomes to standard PEVAR.
Conclusions

- Snorkel, chimney, periscope, sandwich techniques are all here to stay
  - Particularly for urgent cases
  - Management of gutters
- F-EVAR is on-label treatment for short-neck AAA
  - Wait time
  - Iliac access
  - Some design limitations (3 holes)
- Combination (F-EVAR-ch)
  - Favorable short term outcomes thus far

Thank you!