HOW ONYX CAN ELIMINATE GUTTER ENDOLEAKS AFTER PARALLEL GRAFTS USED IN AAA REPAIRS: WHEN TO FIX AND TECHNICAL TIPS

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No Disclosures

ONYX

Onyx is a liquid embolic agent ethylene vinyl alcohol (EVOH) copolymer dissolved in dimethyl sulfoxide (DMSO).

It comes in two formulations:

- Onyx 18 (6% EVOH)
- Onyx 34 (8% EVOH)

Onyx 18 has a lower viscosity and, therefore, may flow further in the endoleak cavity. Both formulas solidify within 5 minutes of injection.

The role of Liquid Embolization

- Type I Endoleaks
- Type II Endoleaks
- Gutters

Handling of Gutters

- Watchful waiting all gutters
- Pro active treatment of high flow gutters
- Pro active treatment of low flow gutters
- Watchful waiting low flow gutters
- Maximum overlap (ViaBahn)
- Sandwich Grafts
Ruptured Juxtarenal AAA 87 years

Off the shelf solutions: Chimney Grafts

Gutters TAAA

Issues of Chimney-technique

Type I a Endoleak (, Gutter Effect ,)

2.7-14.2% 0-2.8%
12.5% 6.2%
10% 4.0%
10% 3.0%


The role of Onyx in Gutters after ChEVAR

831 patients

EL – 1: 13% Visceral and Renal Arteries

EL-1: 11% Arch Vessels

Real World Experience

- Developments in parallel grafts for aortic arch lesions.
- 65 parallel grafts

Due to the shortage of commercially available off the shelf aortic arch grafts, parallel grafts and chimney grafts have played an increasing role in the treatment of patients with aortic arch lesions. Although there are still issues with type I endoleaks and gutters remaining, we report our results with the Medtronic thoracic graft in combination with long self-expanding parallel grafts, to ensure an overlapping zone of more than 7 cm between the different grafts. Alternatively, sandwich configurations are used where a direct contact between the parallel graft and the aortic wall is avoided. We have placed a total of 65 parallel grafts into supra-aortic branches. In 21 cases chimney grafts were placed into the carotid artery, in most cases into the left common carotid artery. In 36 cases chimney grafts were placed into left subclavian artery. A maximum number of 4 parallel grafts were placed for total endovascular debranching. In addition, in 8 patients a parallel graft had to be placed into the innominate artery. There was a patency of 69% for all subclavian artery chimney grafts versus 73% for carotid artery parallel grafts. Of note is a stroke rate of 5.2% in all these cases. Only 2 of the patients with an occluded left subclavian artery chimney graft required a bypass procedure for arm claudication or ischemia. We had a primary type I endoleak rate of 28%. In almost 25% secondary interventions were required mainly to treat type I leaks, in those cases where the leak did not resolve spontaneously. The overall mortality rate was 3.5%. The results of parallel graft in the aortic arch are promising, but of major concern is still the high rate of type I endoleaks as well as the neurological complication rate, most probably due to catheter manipulation in patients with severe atherosclerotic arch lesions.

Sandwich TAAA II 14 days later

You cannot rely on it
High flow gutters should be treated immediately.

Watchful waiting?

Gutters in TAAA

The more Chimneys the more gutters

Adjunct in High Flow Areas

Symptomatic Aneurysm Indication for Chimneys + Active Gutter Sealing

Chimney + Polymer Sealing => Active Gutter Elimination – transbrachial access

Primary Gutter Sealing

- Juxtarenal Aneurysm: 14
- TAAA: 3
- Aortic Arch:
  - Type I leak:
  - Type III leak
Sandwich TAAA II
Primary Onyx Sealing

Onyx Immediate sealing

4 Barrel Endo Debranching
Prophylactic Use of Onyx

Challenges 5.3 cm
Taking care of HIGH FLOW gutters (Coils / Onyx™)

The Future
- Polymer sealing prophylactically of all Chimney Gutters
- Results with CHEVAR and Onyx similar to Fenestrated and Branched grafts

Conclusion
There is still ample space for improvement

Thank you