Laser-Assisted Transgraft Embolization: An Additional Option for Treating Type II Endoleak

Zvonimir Krajcer, MD
Faculty Disclosures

Zvonimir Krajcer: Speakers’ Bureau – Abbott, BARD, Endologix, Teleflex, Medtronic

Dr. Zvonimir Krajcer has disclosed that the off-label use of Cross Seal, PerQseal, InClossure, Closer LB, Velox LB, Onyx will be discussed.

Brand names are included in this presentation for participant clarification purposes only.
No product promotion should be inferred.
Type II Endoleak

- Type II endoleak is one of the most frustrating complications of EVAR, due to its unpredictability, the need for close surveillance, and high endovascular expertise for this repair.
- Prevalence 10-35%*
- Spontaneous thrombosis 30-60%**
- Delayed presentation 27-32%**
- Rupture rate mortality (META analysis) 50%***

Type II Endoleak

Size of the “nidus” - predictor of persistent type II endoleak*

“Simple” Type
- Small cavity with ingress & egress from a single vessel, like pseudoaneurysms frequently close spontaneously!

“Complex” Type
- Multiple ingress and egress vessels, like AV malformations frequently persist!

After coils

6 months after

IMA Endoleak

1 year after

After 4 different coil embolization procedures!

Issues with Transarterial Embolization of Type II Endoleak
Persistent T2E treated via TLE/TAE

N=68 secondary interventions
- Coils, onyx, non-onyx glue, lumbar ligation…

Conclusions: Secondary intervention for PT2 is associated with success in less than half of all cases. Onyx glue embolization was associated with greater long-term success when used as the initial secondary intervention. (J Vasc Surg 2012;56:630-6.)
Not always technically possible to gain catheter access to the target!
This technique utilizes laser energy to micro-puncture the endograft via transfemoral arterial approach to access the aneurysm sac at the precise site of the endoleak nidus, irrespective of its location.
Equipment for Laser-assisted Transgraft Treatment of Type II Endoleaks

Spectranetics CVX-300®
Excimer laser & 0.9 mm laser catheter

Destino Torqueable cath.

0.014 wire
Compatible micro-catheter

MARATHON™
REBAR™
ULTRAFLOW HPC™
Onyx

- Ethylene vinyl alcohol copolymer dissolved in dimethyl sulfoxide and suspended micronized tantalum powder for better visualization
- Intracranial embolization agent
- Contact with blood - instant solidification
- Liquid center continues to flow
- Solvent (DMSO) diffuses away
- Forms a spongy
Laser-assisted TGE with Onyx: Case Presentation

Echelon™ 10 micro-catheter: 2.1/1.7 OD, 0.014 compatible, 150 cm usable length, EV3

Courtesy of Mark W. Mewissen.
Post-embolization limb graft angiogram shows no contrast extravasation
Laser-assisted TGE with Onyx

Pre-embolization

7.4 cm

At 6-month follow-up

5.7 cm
Laser-assisted TGE with Onyx: Case Presentation
Laser-assisted TGE with Onyx: Completion Angiogram
Laser-assisted TGE with Onyx can be performed with variety of endografts

Endoleak

Onyx

Onyx

Onyx

CTA at 12-month follow-up
Laser-assisted TGE with Onyx: Results

- From 03/2011-05/2017
- TGE with Onyx: n=32
- Technical success: 31/32 (98%)
- No major complication
- 1 year CTA: 21
  - 86% decreased or stable AAA diameter

Conclusions

• TGE with Onyx offers easy access to endoleak
• TGE reduces time and complexity of the procedure
• This technique offers improved procedural and mid-term results of type II endoleak treatment
• Longer follow-up in a greater number of patients is needed to prove all the benefits of this technique