Onyx 34 liquid embolic system for treatment of type 1 endoleaks after chimney stentgrafts

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Chimney stentgraft technique

- Chimney / snorkel / periscope used for
  - juxtarenal AAA
  - short proximal necks
- Alternative to fenestrated grafts
Problem of Chimney stentgrafts

- Flow through „gutter“
  = endoleak type 1a
Endoleaks type 1a after chimney

- 41 patients (2008-2012) with chimney stentgrafts

- Type 1a endoleaks:
  - 1/41 (2.5%) at procedure
  - 3/41 (7.5%) during follow-up (median f-up 18.2 months)

→ total type 1a endoleak 4/41 (10%)
Endoleaks type 1a after chimney

- Review of 15 published reports on chimney stentgrafts
- 93 patients
- Type 1a endoleaks:
  - 3/93 (3%) at procedure
  - 10/93 (11%) during follow-up (mean f-up 9 months)

→ total type 1a endoleak 13/93 (14%)
Treatment options: block the gutter

- Coils
  (likely incomplete)

- Liquids
  (complete filling)
Ethylene vinyl alcohol copolymer „ONYX“ (Covidien)

- Liquid embolic
- Slow hardening starting at surface
- Controlled application
- Good visibility (artefacts on CT!)
ONYX to treat type 1a endoleaks
Henrikson et al. Vascular. 2011;19(2):77-81

- Successful sealing of a type 1a endoleak after chimney stentgraft in 4 patients
Case example

- 74 y/o male with 6.2cm juxtarenal AAA
- Chimney stentgraft 2 years ago
- Type 1a endoleak 1 year ago
Aortogram pre
Catheter placement into endoleak

- Stable catheter position is important
  - reversed catheter (femoral)
  - angled catheter (radial)
- Coaxial microcatheter into endoleak
Catheter placement into endoleak
ONYX injection

Rot -2°
Lagew 2°
FD 31 cm

start slow
ONYX injection
ONYX injection

Rot -2°
Lagew 2°
FD 31 cm

go with the flow
ONYX injection
ONYX injection

origin of IMA
ONYX injection
ONYX injection
ONYX injection
ONYX injection
ONYX injection
ONYX injection
ONYX injection
ONYX injection

stop!
ONYX injection: different views

Rot -51°
Lagew:2°
FD 31 cm
Aortogram post
CT follow-up at 3 months
ONXY artefacts on CT

- New formula with less tantalum: ONYX 34L
Amount of ONYX needed

- Transcatheter embolization 6 patients with type 1 endoleak after abdominal EVAR
- ONYX 34 (because of high viscosity)
- Mean amount of ONYX: 11.8 ml (range 3.0-25.5ml)
New ONYX 34L for peripheral use

- **6ml vial**
  
  (less vials necessary)

- Shake for >10min.
Take home points

- Type 1a endoleaks not uncommon after chimney stentgrafts
- ONYX is well suited to treat type 1 endoleaks

Technical tips

- stable catheter position
- take enough images (different views)
- start slow, go with the flow and stop on time
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