Direct puncture technique using Onyx 34L for endoleak management
Re-do procedures after EVAR and management of endoleaks
Marcus Treitl
Disclosure

Speaker name:

Marcus Treitl

I have the following potential conflicts of interest to report:

✔ Consulting: Penumbra, Medtronic
Employment in industry
Stockholder of a healthcare company
Owner of a healthcare company
Other(s)
Direct puncture of Aneurysm Sac

• Treatment of choice (if endovascular approach failed)
• Imaging guided puncture with
  – CT fluoroscopy
  – Ultrasound
• Followed by embolization with
  – Liquid embolics: Onyx™, Cyanoacrylate
  – Mechanic embolics for outflow vessels, e.g. coils
• Control of embolization process
  – Ideally with Angio fluoro
    • Change patient from CT to Angio
  – CT fluoroscopy
    • Caveat: hard to control non-target embolization of visceral / lumbar arteries
• Drawback of standard formulation of Onyx™: artifacts in follow-up imaging
Onyx™ 34L Liquid Embolic System

- The „L“ Onyx™ liquid embolic agent allows for:
  - Less tantalum compared to the current version
  - Less streak artifacts on CT with a good visibility during injection
  - Approved for peripheral embolization in endoleaks

- 6 ml vial available for large volume applications
- As good visible as promised?
- Tips for use?
CT-guided embolisation: technique

- CT protocol:
  - Diagnostic Scan: bi-phasic in arterial and late venous phase (120sec): 80ml CM
  - Embolisation under CT-fluoroscopy
  - Final scan: arterial phase

- Punction:
  - 19 G, 22cm Translumbar Aortography Catheter Needle (Cook Inc.)
  - Sometimes: Coils, e.g. 3D Concerto, Axium Onyx compatible Micro-Catheter: Echelon-14 (ev3 Inc.)


Endoleaks - M. Treitl 5
CT-guided embolisation: technique

- Embolisation:
  - CT-guided puncture of the aneurysm sack
  - Positioning of the catheter
  - Coil placement

  - Large / high-flow endoleaks
    - Introduction of Onyx-compatible microcatheter
    - Positioning of catheter marker
    - Onyx injection
      - min. 0.05ml/min, max. 0.3ml/min
    - Repeat CT-fluoroscopic scans to control Onyx cast


Placement of catheter tip in endoleak nidus

DMSO compatible needle: direct injection possible

My suggestion: co-axial microcatheter for injection
Injection of Onyx until whole endoleak has been filled up completely

Control of injection with CT fluoro possible, but:
- high radiation exposure
- no good control of non-target embolization
My suggestion: transfer patient to angio for embolization
Type II endoleak with lumbar inflow, no trans-arterial treatment option

Planning scan already in prone position

CT guided puncture with aortography needle (short pain): you may orientate by wall calcifications of the aorta

Placement of a Rebar™-18 Microcatheter
Move to the Angio-Suite, needle and catheter are secured by a sterile person

Endoleako-graphy with depiction of inflow and outflow vessels and to estimate the volume and the whole extent of the endoleak

Trans endoleak probing of outflow vessels with microcatheter

Embolization of outflow with MVP™ Microvascular Plug System 3: safes material and reduces pain

Protective embolization of lumbar outflow

Embolization with mit Onyx™ liquid embolic system 34
  - Tip: start with small drop of standard Onyx if visualization of catheter tip compromised

Occlusion of puncture defect and canal with Onyx™ liquid embolic system during catheter pullback (slightly painful)
Summary: endoleaks DP

• Direct puncture: safe alternative with various options
  – \( n = 87; 98.5\% \) technical succ.; \( 89.2\% \) clinical succ.
  – 1 major complication: retroperitoneal bleeding, self-limiting
• Reaching the nidus essential
  – Try trans-arterial first, change to direct puncture in case of failure
• Onyx™ liquid embolic system so far best performer
  – Safe, fast, easy to use
  – High technical and clinical success rates
  – Lower recanalization rate than other embolics
• Onyx™ 34L
  – Excellent visualization, control of embolization sufficient
  – No device related complications
  – Significantly reduced artifacts in follow-up imaging
Thank you very much!

Prof. Dr. med. Marcus Treitl, EBIR, MBA
Department for Radiology, Neuroradiology and Interventional Radiology
Trauma Center Murnau

Tel:  +49 - (0)8841 – 48 - 3883
E-Mail: marcus.treitl@bgu-murnau.de
Internet: www.bg-murnau.de
Direct puncture technique using Onyx 34L for endoleak management

Re-do procedures after EVAR and management of endoleaks

Marcus Treitl