Technical and practical aspects of highend embolo therapy

Minimal invasive therapy of endoleaks

Marcus Treitl, MD, EBIR
Clinic and Policlinic for Radiology
University Hospitals of Munich
Disclosure

Speaker name:

Marcus Treitl

I have the following potential conflicts of interest to report:

- Consulting: ab medica, BTG, Endoscout, Medtronic
Endoleaks: challenging drawbacks of EVAR

- **Def.:** persistent blood flow to the aneurysm sac
- **Frequent complication of EVAR / TEVAR**
  - Up to 25% of the cases
- **Urgent treatment for type I and III**
  - Domain of e.g. endostapling
- **Different strategies for type II**
  - In > 40% spontaneous occlusion
  - High recurrency rate

Male, 81yrs
- EVAR 2016
- Typ Ia EL

Trans arterial embolization via transinguinal access (SIM1)
- endoleakography

Trans EL embolization of outflow vessels

Nidus embolization with Onyx 34™ (9ml)
Type 2 EL: to treat or not to treat?

- Majority of European and American guidelines:
  - Treat always if sac expansion is present
- Risk of rupture ≈ 0.9%
- Many cases require more than one procedure
- Attempts to predict the outcome of T2EL:
  - Number and diameter of aortic branches, especially IMA (e.g. Güntner, et al. 2014, Müller-Wille, et al. 2015)
  - Thrombus protects from sac enlargement
    - Low thrombus volume (< 30%) is risk factor for persistent T2EL
  - Endoleak nidus > 15mm is predictive for sac enlargement
Type 2 endoleaks: treatment strategies

- **Typical finding:**
  - Fed by the inferior mesenteric or a lumbar artery via iliolumbar a.

- **Follow-Up surveillance**
  - As long as there’s no sack growth
    - 40% occlude spontaneously

- **2 possible treatment strategies**
  - Trans-arterial via SMA / hypogastric
    - Can be difficult
    - Reaching the nidus prerequisite for success
  - **Trans-lumbar direct puncture**
    - E.g. CT guided
Variants of iliolumbar endoleak embolization

Summary:
- Trans arterial treatment of Ilb EL can be challenging
- Advanced embolization techniques may be necessary, e.g. Plug and Push technique
- Worth giving it a try
Male, 76yrs
• EVAR 2017
• Typ IIa EL via IMA

Trans arterial trans riolan probing of IMA and EL

Trans EL embolization of outflow vessels

Protective embolization of IMA ostium with MVP Plug

**Summary:**
• Trans arterial treatment of IIa EL is method of choice
• Trans EL embolization of outflow vessels reduces pain, volume of embolic agent and risk of recurrence
• Protective embolization of IMA ostium reduces risk of mesenteric non-target 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

Introduction of micro catheter into catheter needle after withdrawal of steel core by use of Y-adaptor
Move to the Angio-Suite, needle and catheter are secured by a sterile person

Endoleakography 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

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

Switching to the Angiosuite for the embolization process after CT guided puncture allows for:
- Navigation within the EL
- Reliable control of embolization
- Protective embolization of side branches
Male, 87yrs
- EVAR 2016
- Iliac side branch right
- Complex combined type Ib and Ila EL

CT guided puncture of hypogastric artery right

In angio suite:
- Embolization of hypogastric artery sidebranches

In angio suite:
- Trans endoleak embolization of lumbar sidebranches

In angio suite:
- EL nidus embolization with 11 vials Onyx™ 34L
  - (2 x 6ml, 9 x 1.5ml)
Summary and conclusion

• Type 1 endoleaks
  – Endovascular treatment important bailout technique
• Type 2 endoleaks
  – Treatment if sac enlargement
  – Endovascular and percutaneous treatment safe with different benefits: patient tailored approach necessary
• Published data: trans lumbar = trans arterial
  – Technical success in 85 – 100%, clinical success > 60%
  – Reaching the nidus essential
• Onyx™ liquid embolic system so far best performer
  – Safe, fast, easy to use
  – lower recanalization rate than other embolics
• Protective embolization of inflow / outflow vessels
Thank you very much for your attention!

• CORRESPONDING AUTHOR:
  Prof. Dr. med. Marcus Treitl, EBIR, MBA
  Hospitals of the Ludwig-Maximilians-University of Munich
  Clinic and Policlinic for Radiology

• Fon:  +49-89-44005-9240
• E-Mail:  mtreitl@med.uni-muenchen.de
• Internet:  www.klinikum.uni-muenchen.de
  www.radiologie-lmu.de