Principles of coil embolization and available materials

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Disclosure of conflict of interest

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I have the following potential conflicts of interest to report:

Consulting

- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

I do not have any potential conflict of interest
Standard practice of embolization – New applications?

- Vascular Plug
- Coils
- Alcohol
- Aethoxysclerol
- Particle
- Onyx, Ethibloc
- Cyanoacrylat + Lipidiol
Choice of Material

• Characteristics of the target organ or vessel system
• Anatomy and diameter of the target vessel (s)
• Emergency vs. planned treatment
• Individual experience of the interventional team with a certain product
Gianturco Coils vs. Platinum Coils

**Advantages:**
- High radial force
- Good for large vessels
  - Basis of the Scaffold Technique

**Disadvantages:**
- High consumption of coils
- Catheter can be dislocated
- Strong artefacts

**Advantages:**
- Better visibility
- Smaller radial force = softer
  - Less catheter movement
  - Simpler “packing”
- MRT compatibility

**Disadvantages:**
- Smaller radial force
Coil Forms

- Hilal
- Tornado
- Complex helical
- Nester & Micronester
- LEF vs. SEF
Coating - Coils
Application Technique

• Coil pusher
  - Long, soft tip
  - Not tapered
  - Gap in X-ray density allows easier identification of coil and pusher

• Injection – saline flush
  - (physiol. NaCl / tuberculin injection)

• Care! Observe safety distance from vessel wall

Courtesy: M. Pech, MD, Magdeburg, Germany
Detachment Mechanism
Vascular Plug Forms
Coating - Plugs
Embolization prior to EVAR

VP II – 16 mm left IIA

VP IV – 6 mm IMA

Courtesy: M. Pech, MD, Magdeburg, Germany
Right colic artery diverticular bleeding

Courtesy: M. Pech, MD, Magdeburg, Germany
GDA bleeding – back door

Courtesy: M. Pech, MD, Magdeburg, Germany
Prior to SIRT - Anchor technique similar?
Endoleak Classification

Type II → most common type of endoleak and generates the majority of secondary interventions

Aneurysm sac filling retrogradely via single branch vessels

Aneurysm sac filling retrogradely via multiple branch vessels

Source: http://quizet.com/vascular-i-flash-cards
selektiv

AVP IV

Coils
best thing you can do?

use glue!
Conclusions

• Knowing the advantages and disadvantages allows choice of the most suitable device
• Vascular Plugs reduce exposure and procedure time
• Preferences:
  - small vessels and/or tortuous anatomy use Coils
  - If guiding catheter can be placed use a Plug
  - In case of trauma and/or coagluopathy coated devices can be more effective
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