Is It Cured? MR And Angiographic Imaging After Treatment With Radioopaque Embolizing Agents (Onyx)


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Radioopaque Embolizing Agents

• NBCA (glue)
  – Not a good idea in peripheral AVM
  – Flow-passive, fast polymerization, controllable (?)

• EVOH
  – Onyx, Squid, PHIL
  – Against the bloodstream: plug & push
  – Complete filling needed to cure an AVM

How to image AVMs: MRA

• Dynamic CM-enhanced MR-Angiography
  – TOF, phase-contrast MRA etc. insufficient

• High temporal and spatial resolution
  – Fast scanner
  – Good sequence protocol

• Large FoV

How to image AVMs: DSA

• „High, hot, and helluva lot”
  – Proximal injection site
  – High injection rate
  – Enough CM

• Late venous phase to demonstrate occlusion
  – Please don’t present early/arterial phase images…
    • Only venous phase demonstrates the result
  – Early venous drainage visible⇒ Not occluded!

Did I miss a feeder?

Yes. The kidneys were feeding as well…..
Special issues in AVM-DSA-imaging

- Flow-passive imaging
  - Parts of the nidus may be overlooked
- Vasospasm after embolization
- Thrombosis after embolization
  - Real result may not be as pretty....
- Overlap of radiopaque agent may be an issue
  - Angioarchitecture obscured after many vials of EVOH
  - Result is not obscured \(\Rightarrow\) early venous drainage
Why is MRA better than DSA?

- Basics
  - Non-invasive
  - No radiation (children, repetitive control imaging)
  - In most cases no sedation
- No issues with late venous phase imaging
  - Image as long as you like
- No issues with very distant feeders
  - Large FoV, no issues with injection site (iv-injection)
- No overlay of radioopaque material

Summary

- DSA is nice
- MRA is better to control the result
  - FoV, aim for high temporal + spacial resolution

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