Emerging embolisation therapies

Tips and tricks for treating endoleaks

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Disclosure

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I have the following potential conflicts of interest to report:

❌ Consulting: Abbott, ab medica, Biotronik, BTG, Endoscout, Medtronic, Straub
Challenges of EL embolization

• Neighbourhood to vital structures
• Endoleaks have inflow and outflow → risk of non-target embolization (e.g. ischemic colitis / spinal ischemia)
• Large and irregular cavities to fill
  – Often larger than they seem in CT scan!!!
• Sometimes difficult access / complex anatomy
• High blood flow velocities / turbulent flow
• Unclear endpoint:
  – just the nidus / just the inflow / all?
Trans catheter Embolization of Type 1 Endoleaks: Step by step

- Embolization of relevant sidebranches
- Reduce use of embolic agent
- Risk of non target embolization
- Risk of recurrence
- Do not use extensive force to pullback microcatheter
- Can lead to loss of catheter position
- Better: use several short picks at the catheter
CTA prior to embolization

CTA after the embolization
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*
Trans arterial embolization of type II EL: how to I

1. Identify possible feeding vessel in biphasic CT
   – IMA? Lumbar artery?

Arterial phase:
Contrast pools dorsally first:
Lumbar artery

Arterial phase:
Contrast pools ventrally first:
IMA
Trans arterial embolization of type II EL: how to II

2. Select optimal treatment approach:
   - Inflow via IMA:
     • Endovascular via SMA
   - Inflow via iliolumbar artery:
     • Start endovascular
     • Reaching the nidus essential
     • Can be complex (plug-n-push)
     • Consider direct puncture
       – After failure of trans arterial technique
       – When trans arterial seems little promising
Trans arterial embolization of type II EL: how to III

3. Groin access (6F)
   – Side of the assumed feeding vessel first
   – Always prepare both groins

4. Probe target vessel:
   – Lumbar artery ➔ Iliolumbar
     • 4F Hook / RIM catheter
   – IMA ➔ SMA
     • 4F sidewinder catheter or 4F cobra catheter C2
Tips and tricks for iliolumbar endoleak embolization

- Reduces use of material and pain
- Direct access cannot be catheterized!
- Indirect embolization of the nidus via Plug-n-Push
  Never!
- High recurrence rate if nidus cannot be reached / occluded!
Tips and tricks for transmesenterial embolization

• Primary goal: avoid mesenteric non target embolization caused by backflow into the IMA
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 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.
Possible complications of type II EL embolization

• Risk of colonic ischemia via IMA!
  – Always inject slowly and with fluoroscopic control

Possible treatment:
- Abstinence from food for several days
- Maybe in combination with Sulfasalazin
Thank you very much for your attention!

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