Liquid Embolic Treatment of Type II Endoleaks by Direct Puncture

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Disclosures

• Consultant / Speaker / Proctor / Advisory Board

• Abbott
• BD Bard
• Boston Scientific
• Cook
• iVascular
• Medtronic
• Merit
• Penumbra
• Philips
• Volcano
• W.L. Gore & Associates
• Zylox Tonbridge
Background

- Type II EL: 10 – 45 % of EVAR
- No sac enlargement: 30%
- Spontaneous resolution: 40 – 58%

- Lumbar aa.
- IMA
- Accessory Renal aa.
- Medial Sacral aa.

Embolization: sac enlargement >5mm over 6-mos period
Persistent Type II EL has been compared to AV malformations

- Inflow-outflow action must be interrupted
- If only the inflow is occluded, perfusion of the aneurysmatic sac can be maintained by recruitment of other side branches
TransLumbar

- More direct approach
- No time consuming
- High success rate
- Low recurrence rate
- Selective and non-selective embolization
Liquid Embolic Agents

- Well established embolic agents
- Different viscosity that allows control-injection in different settings
- Deep vascular penetration and full occlusion of vasculature
- Complete occlusion independent of the patient's coagulation system
- Rapid polymerization reduces the risk of non-target embolization
- Pt. in prone position /supine
- Local anesthesia
- Access the aneurysmatic sac through the left side
- Ideal pathway: lumbar muscle (avoid bowel and vessels)
- Hydro/carbo dissection if needed
How to do

- 5Fr / 15cm needle catheter
- 22G Chiba needle

- 4 Fr. / 65cm catheter (Cobra 2, Bern)
- 2.7Fr microcatheter (DMSO compatible)

- Embolic materials: liquid (Onyx, Squid, Phil, Easyx) – coils – plugs

- Local anesthesia + sedation if using DMSO

Cone Bean CT
Not necessary to enter the sac at the level of the EL
Complications

- Incidental puncture of the endograft
- No-target embolization (IMA, lumbar aa.)
- Bowel perforation
- Nerve damage
- Retroperitoneal hematoma
F.R. - 77 y, Female

Hypertension

12-mos post-EVAR

Sac enlargement +12 mm
Concerto detach micro-coils (Medtronic) + Onyx 34 (Medtronic)

Cobra 2 4 Fr. (Cordis)
2.7 Fr DSMO microcatheter
Concerto micro-coil
Ø 5mm
+
Onyx 34

Onyx 34
4cc
(Medtronic)
Personal Experience

From 2010: 87 pts with type II EL

Technical success 62/62 pts

• Access:   posterior Lt 73 (83.9%)
  posterior Rt 9 (10.3%)
  anterior 5 (5.7%)

• Procedure Time: 51.36 min (range 36 – 68 min)
  Fluoro time: mean 16.7 min
  Nº rotational-angio: mean 5 (range 3 – 7)

• Complications: 0/87
• Reintervention: 2/87 (2.2%) after 9 and 12 mos.

12-mos sac diameter:
• Regression: 56/87 (64.3%)
• Stable: 31/87 (35.6%)
G.M. - 72y, Male

12-mos post-EVAR

Sac enlargement  +10 mm
Coaxial system
4Fr. C2 catheter (Cordis)
2.7 Fr. DMSO microcatheter

Onyx 34
6cc
(Medtronic)
Conclusions

- The trans-lumbar direct sac approach appears to be a feasible and safe technique that allows complete occlusion of the feeding vessels and the aneurysmal sac.

- A low rate of non-target embolization has been reported.

- This technique reduces the complications and difficulties associated with the transarterial approach (tortuosity, too proximal embolization, etc.)

- Combined embolic agents (coils+Onyx) allow a safe and more efficient embolization of the EL

- Various new liquid embolic agents have been developed to address the drawbacks of currently available commercial liquid embolic agents. However, there is still a long way to go before their clinical use.
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