How I Treat Pelvic AVMs

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Pelvic Vascular Malformations
- Congenital Hemangioma
- Venous Malformations
- Lymphatic Malformations
- Fast – Flow Vascular Malformations (AVMs)(AVF)
- Combined Vascular Malformations (Klippel-Trenaunay Syndrome) (Parkers- Weber Syndrome)

Pelvic AVMs
- Evolve over time
- Evolution stimulated by trauma & hormonal changes (puberty, pregnancy…)
- Several mutations have been identified
- Multivessel supply from one or both hypogastric arteries, IMA, middle sacral artery, branches of common femoral artery
- Venous drainage to hypogastric veins

Symptoms
- Pelvic pain or pressure
- GIS bleeding
- Urinary symptoms
- Hematuria or menorrhagia
- High-output cardiac symptoms (cardiomegaly, palpitations, shortness of breath…)

Treatment/Embolic Agents
- Surgery (skeletonization)
  - Debulking surgery combined by peripre embolization
- Transarterial:
  - Particles and microspheres
  - Liquid sclerosants; etanol, atheroskleroz...
  - Liquid casting agents; NBCA, ONYX, Squid12LD
- Transvenous approach:
  - (etanol, atheroskleroz, coils)
- Percutaneous:
  - (etanol, atheroskleroz)
- Combination of techniques and agents

ONYX Modified Technique
- ONYX %18 diluted with DMSO;
  (%60 ONYX %18 + %40 DMSO)
- Flush microcatheter via DMSO
- Magnification (small field) is necessary
- Prepare extra 1-2 DMSO syringes on the table

Embolization of Peripheral Vascular Malformations with Ethylene Vinyl Alcohol Copolymer (Onyx)
Right Gluteal Low-flow AVM

33-y M. Pain, limitation of movement, swollen of the extremity with effort.

Acute Bleeding of Uterine AVM after Therapeutic Curetage/2011

23 y, F

Acute Bleeding of Uterine AVM after Therapeutic Curetage /2011

Post-embolization f-u MR/2013
MR and CTA Pre-embolization

31 y F, Suffers only swollen of the left lower extremity during long-standing

US

31 y F, Suffers only swollen of the left lower extremity during long-standing

Diagnostic DSA and 1st Session of Onyx Embolization /2012

1st Session of Onyx Embolotheraphy/2012

2nd Session of Onyx Embolotheraphy/2012

5/2012 2nd Session of Onyx Embolotheraphy

Reflux of Onyx Plug stugged on macrocatheter
After manipulating with guide-wire, the plug was pushed into the LA safely.

A year later, CTA and US after the 2nd session. She is asymptomatic.

Pelvic Hemangioma Diagnostic MR 2005

Onyx Embolization of Pelvic Hemangioma

MR of L Perineal and Gluteal venous VM

Pelvic Bilateral DSA
R Contralateral Transarterial approach / late venous phase

Percutaneous atherosclerosis sclerotherapy

Percutaneous sclerotherapy
Percutanous atheroskleroz sclerotherapy

Post percutanous atheroskleroz sclerotherapy MR(complete thrombosis)

Post percutanous atheroskleroz sclerotherapy US(complete thrombosis)

**Conclusion**

It is difficult to cure the lesion/s totally at once at pelvis but stepwise approch as a treatment strategy by using combination of the embolization techniques and agents will be the best and secure way to approach.