EMBOLIZATION OF EFFERENT VENOUS OUTFLOW OF HIGH-FLOW FISTULA-TYPE ARTERIOVENOUS MALFORMATIONS AFTER FAILED ARTERIAL EMBOLIZATION

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GEST Oral Abstract
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• No relevant financial relationship reported
PURPOSE

- Arteriovenous malformations (AVM)
- Conventionally arterial embolization
- Coils, glues, and particles
- Problems
  - New feeding arteries
  - Non-target embolization
  - Failure to thrombose
  - Serial treatments
  - Long cases
SOME AVMs DEMONSTRATE:

- Many feeding vessels
- Large size & high flow rates
- Severe symptoms & sequelae
- Dominant venous drainage

= Venous Approach
Methods

- Single Center
- 3-year retrospective review
- AVM with single predominant vein
- n=4, low prevalence
- Prior arterial treatment failure (intent)
Case 1

- 53 year old male, refractory hematuria
- Large intra-pelvic AVM involving right ureter and bladder wall
Case 1

Click Image
For Video
Case 1

Initial Treatment by another service; 2008

RIGHT INTERNAL ILIAC ARTERY
Another service, 2008
Case 1

Recurrent hematuria 3/2014
Case 1

LEFT INTERNAL ILIAC ARTERY

VIR Venous Embolization 3/2014
RIGHT INTERNAL JUGULAR ACCESS
Case 1

TARGET

STASIS
Case 1

3/2016: hematuria remains resolved
Case 2

- 41 year old male
- Right posterior thigh AVM
  - Leg swelling
  - Pain
  - Sciatica
  - Claudication
Case 2

R thigh AVM

1/2013

Prior to treatment

Click Image For Video

RT

WW: 4096 WL: 2048
Case 2

RIGHT INFERNOR GLUTEAL ARTERY

coils
Case 2

RIGHT PROFUNDA coiled
Case 2

RIGHT INFERIOR GLUTEAL ARTERY

n-BCA

2/2013 (1 mo)

RIGHT PROFUNDA

n-BCA

5/2013 (4 mo.)
Case 2

11/2013 (10 mo.)

RIGHT INFERIOR GLUTEAL ARTERY
Case 2

11/2013 (10 mo.)

STASIS
Case 2

5/2014

6 mo. post Venous Treatment

Asymptomatic

Click Image For Video

depart. RAO: 12
depart. CRA: 0
depart. L: -89
Case 3

- Relative of Case 2
- 14 year old female
- Painful left forearm AVM
Case 3

LT

Click Image For Video

2/2013
Case 3

BRACHIAL ARTERY

INTEROSSEOUS ARTERY

ULNAR COLLATERAL ARTERY

2/2013
Case 3

2/2013
Case 3

11/2013 (10 mo.)
Case 3

Continued resolution of symptoms

5/2014
Case 4

• 26 year old male

• Lhermitte-Duclos syndrome

• Painful left calf AVM

• Varicosities
Case 4

RIGHT POPLITEAL ARTERY

LESSER SAPHENOUS VEIN
Case 4

- **12/2015**
  (2 mo.)

- Resolution of painful symptoms

- Improvement in varicosities
CONCLUSIONS

• Technical and Clinical success – 4/4 (100%)

• Dominant venous efferent can be a more straightforward and/or effective means for therapy in certain AVMs
FURTHER INVESTIGATIONS

• Does previous arterial devascularization aid in success of subsequent venous embolization?

• Alternative techniques to consider:
  – Retrograde balloon-assisted liquids
  – Vascular plugs

• More patients!!
QUESTIONS?
REFERENCES


