Endovascular management of renal arteriovenous fistula and associated venous aneurysm

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Disclosures

Speaker: Jesse Chait

☒ I do not have any potential conflict of interest

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Clinical presentation

- 66-year-old male with incidentally discovered renal mass after cycling accident
- No hematuria or flank pain
- No medical comorbidities or surgical history
- Professor of neurosurgery at academic institution
- Normal physical examination and laboratory studies
Computed tomography

29 mm venous aneurysm

Arteriovenous fistula (AVF) via posterior branch
Computed tomography
Operative course

- Open surgical exposure of left brachial artery under local anesthesia
- Antegrade cannulation of left renal artery
- CT onlay fusion imaging utilized to identify ostia of posterior artery feeder and fistulous connection
Operative course

• Antegrade transbrachial coaxial system
  • 7 Fr x 90 cm Raabe sheath
  • 6 Fr x 100 cm IM guide
  • 5 Fr x 125 cm Kumpe
  • 4 Fr x 150 cm CXI

• Posterior branch and AVF selected with 0.035-inch soft angled Glidewire
Operative course

- Two 8 mm AVP II devices used to occlude posterior branch feeding AVF
- Successful embolization with non-opacification of the arteriovenous fistula and venous aneurysm
- No significant loss of kidney parenchyma
Clinical outcome

• Discharged home on day of procedure

• No residual fistula on postoperative day 1 duplex ultrasound

• Complete sac thrombosis and regression via 3-year CT angiogram

• Preserved renal function
Lessons learned

• Natural history of giant renal arteriovenous fistulae remains poorly understood

• Endovascular management is a first-line therapy

• Open surgical repair is viable yet challenging and carries a high risk of parenchymal loss

*Representative illustration from similar case*
Lessons learned

- High-flow state increases risk of treatment failure and non-target embolization with foam, liquid embolics, or coils.

Renal AVF with venous aneurysm

Non-target embolization of venous aneurysm

Successful AVF embolization
Lessons learned

• Plug-based embolization is the preferred modality for treatment of visceral arteriovenous fistula and associated aneurysms

• Allows for single arterial access without distal embolic protection or double balloon-assisted flow stagnation

• Delivery sheath may hinder delivery through small or tortuous anatomy
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