Successful management of iatrogenic intrarenal arteriovenous fistula

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DISCLOSURE

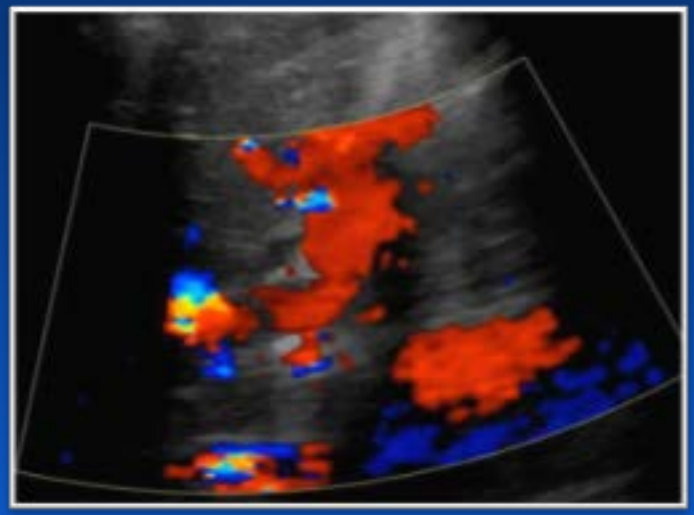
Daiva Nevidomskyte MD

- **No relevant financial relationship reported**

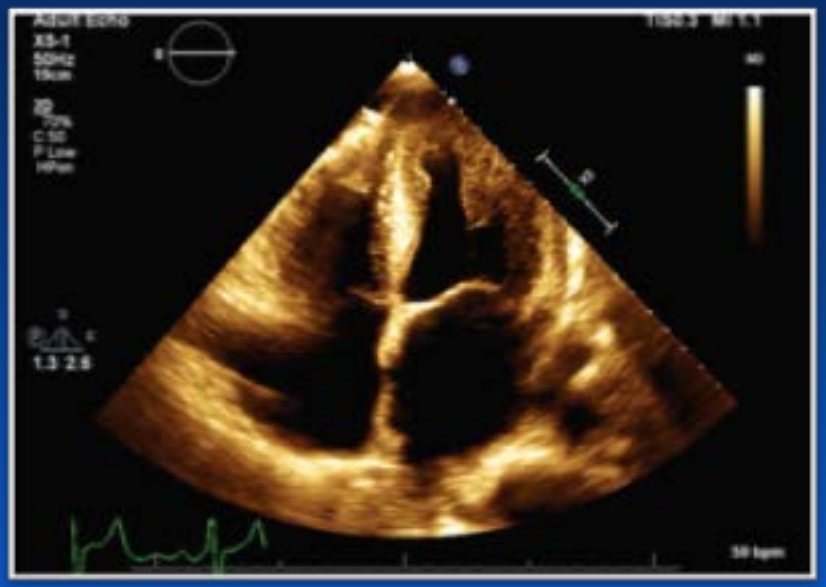
Clinical case

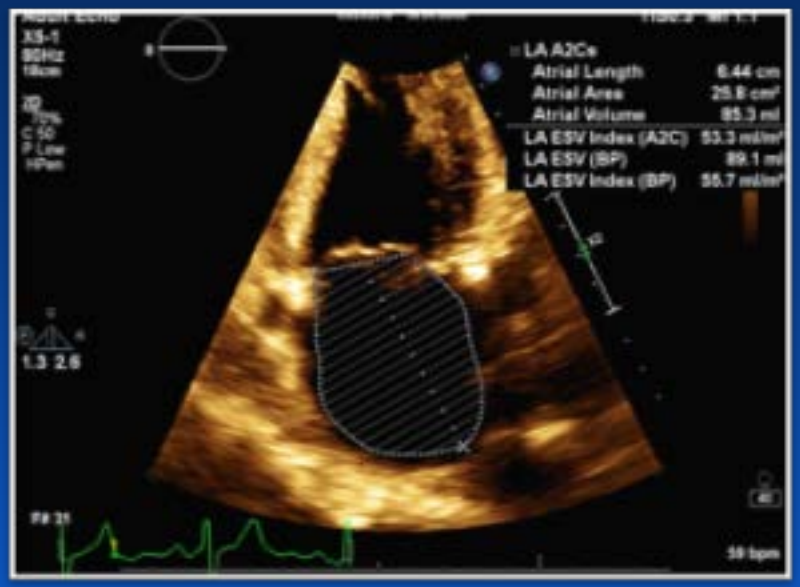
70yo man history of diseased donor kidney transplant in 2008. Incidentally found to have large vascularized R native kidney mass on US.

- **PMH:**
  - Membranous lupus nephritis
  - Well functioning R illiac fossa allograft
  - Non functioning native kidneys
  - Distant history of kidney biopsy
- **Physical exam:**
  - No signs of CHF
  - Systolic ejection murmur



- **CXR:**
  - Cardiomegaly
- **Echo:**
  - EF 69%
  - L atrial enlargement





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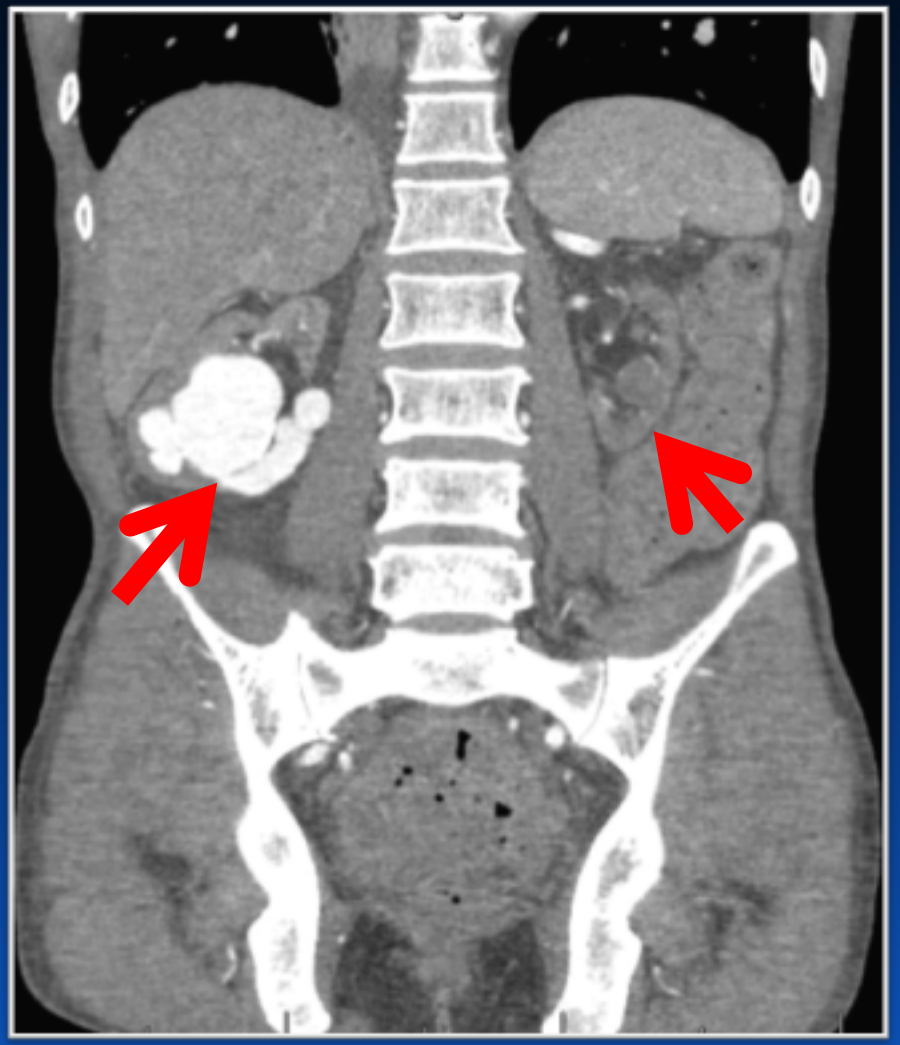

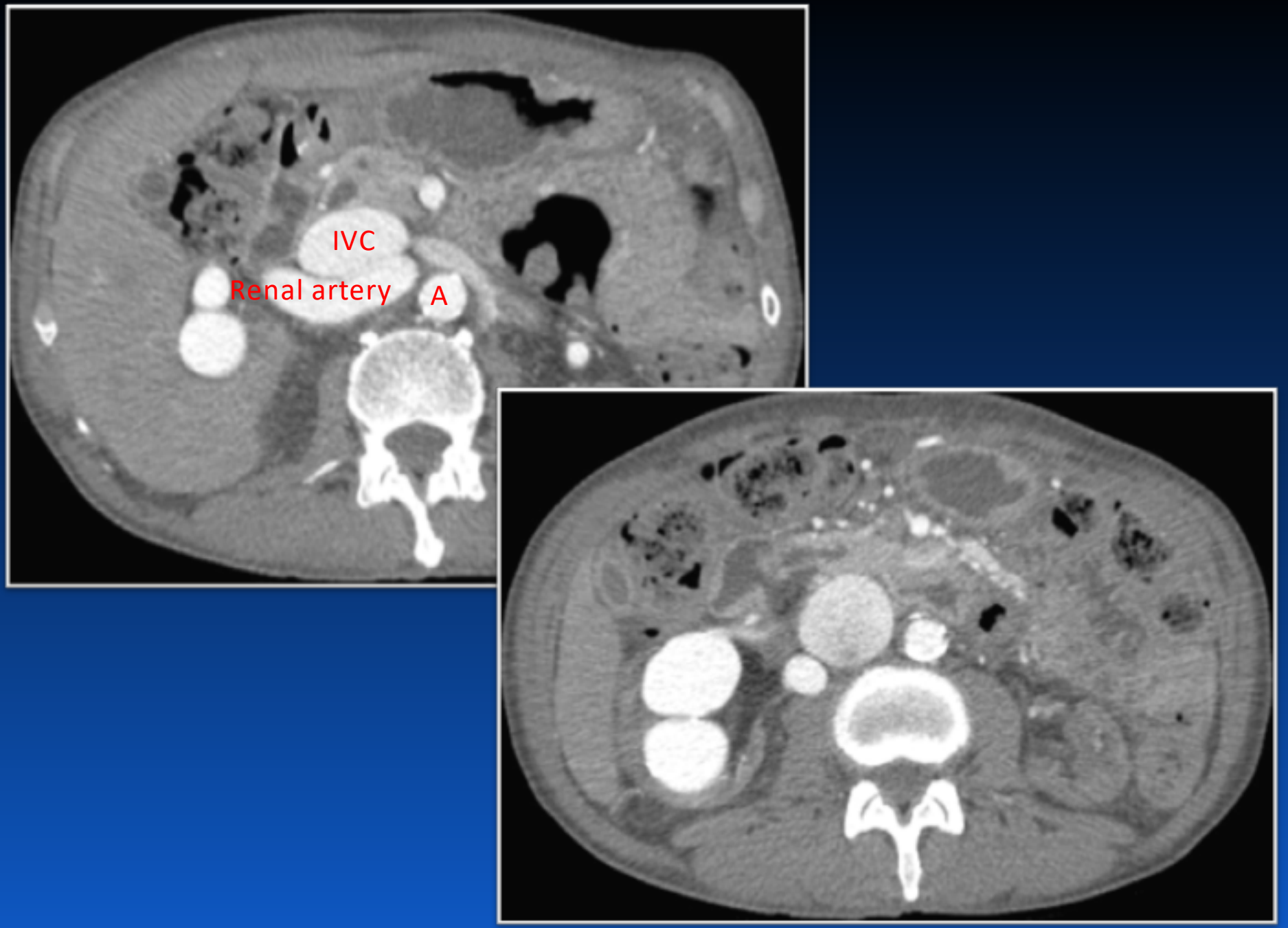
IVC
Renal artery
A

- Right hilar arteriovenous fistula (AVF) and pseudoaneurysm
- Dilated R renal artery
- Mega cava
- L kidney mass

Intraparenchymal renal AVFs

- Well known complication of renal biopsy:
  - 15-18% incidence post-biopsy of A-V communications, usually heal within a few months (2-20 months)
  - Increased risk with HTN
- Trauma, surgery, neoplasm
- Hematuria, HTN, pulmonary HTN, cardiac compromise, cardiac failure
- Low resistance parallel circuit
- Risk of pseudoaneurysm rupture?
- Parenchymal preservation -> treatment strategy

Treatment options

- Arterial/venous embolization
- Surgical ligation
- Nephrectomy
- Other endovascular options ?

Angiogram

Angiogram

Nephrectomy and AVF ligation

- **Multi team approach:**
  - Cardiac anesthesia with TEE monitoring
  - Vascular, transplant surgery, urology
- **Midline laparotomy:**
  - Bilateral radical nephrectomies
  - Ligation of R renal artery, followed by R renal vein
  - R renal artery ligation at the origin, pledgets to the aorta
  - No major hemodynamic changes with vascular ligation
- Uneventful recovery, L kidney grade 3 renal cell carcinoma

Summary

- Intraparencymal renal AVF as a complication of renal biopsy
- Large renal AVFs can lead to high cardiac output state and pulmonary HTN
- Endovascular treatment for cases in which renal function is preserved in the affected kidney, as surgery may be associated with loss of renal parenchyma
- In the endovascular treatment of large AVFs, the presence of a high cardiac output and large inflow/outflow vessel diameter increases the risk of distanl coil embolization
- Surgical AVF ligation w/o radical neprectomy is a feasible option in select cases


Thank you!
Virginia Mason