CIRA CASE OF THE WEEK
January 2017

Case Courtesy of Drs. Michael Schmidt and Errol Camlioglu
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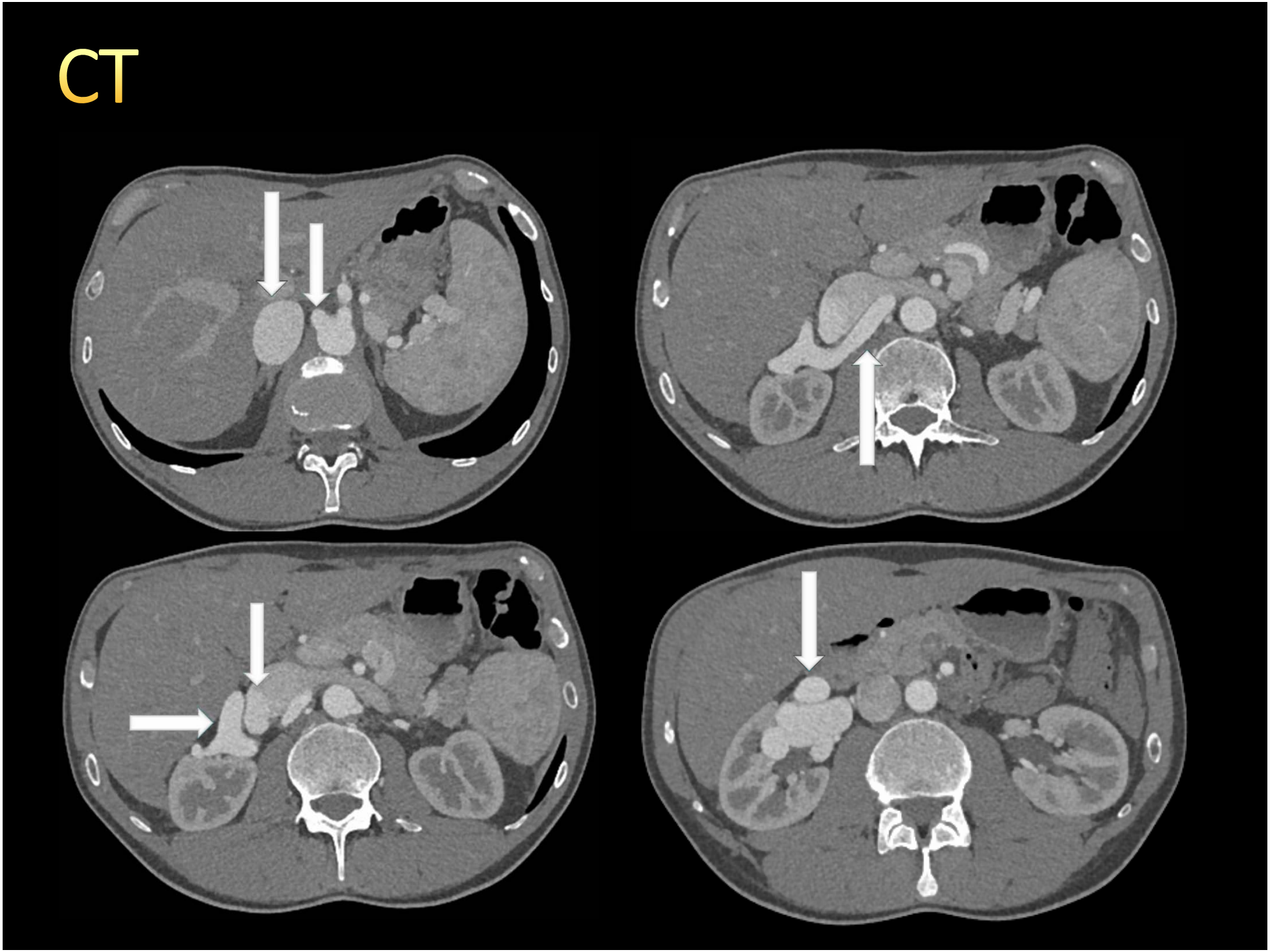
Montreal, Quebec

Clinical History

- 53 year old male with new onset left lower quadrant pain
- Previously healthy
- Bloodwork normal
- Abdominal x-ray unremarkable
- A CT scan of the abdomen and pelvis was performed


CT

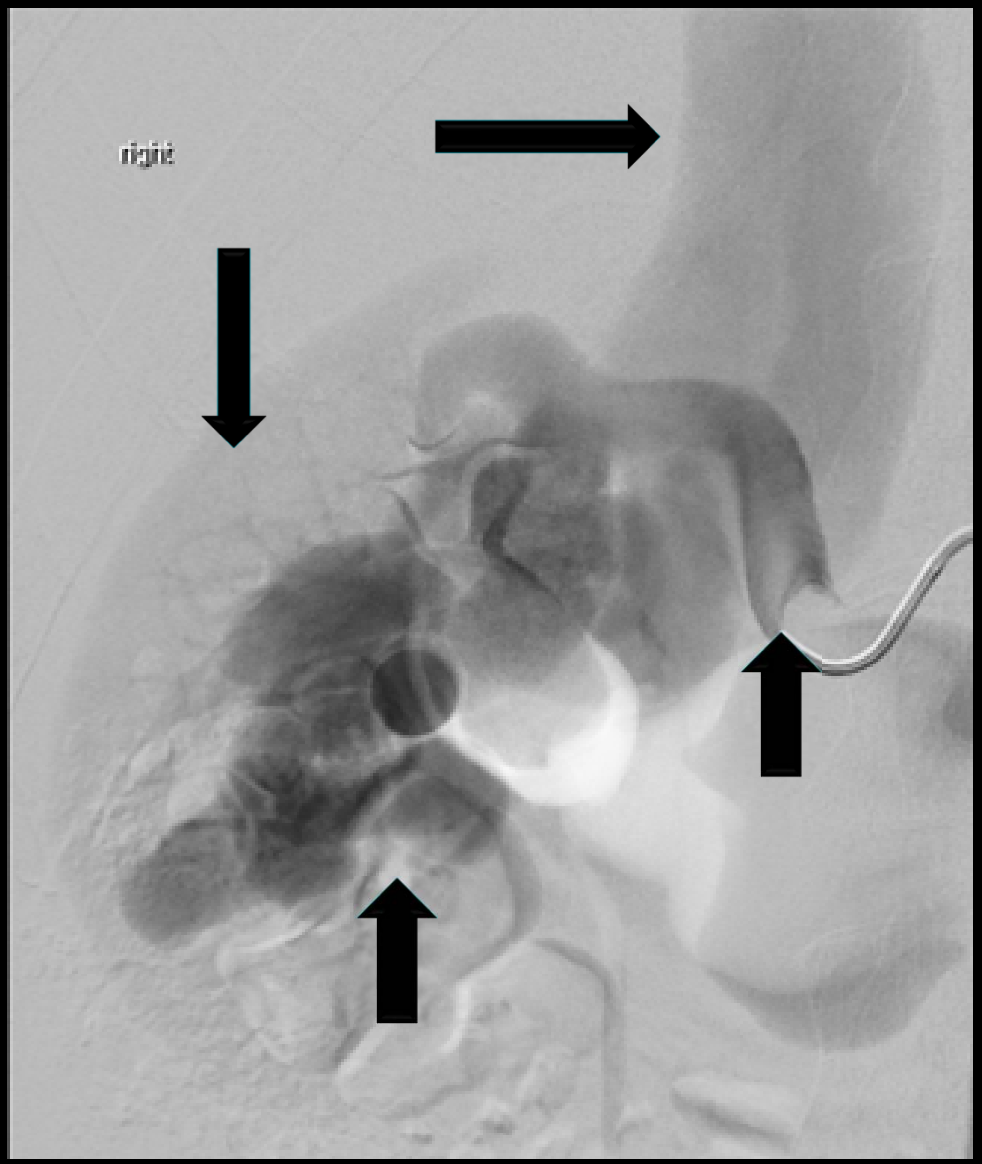
CT Findings

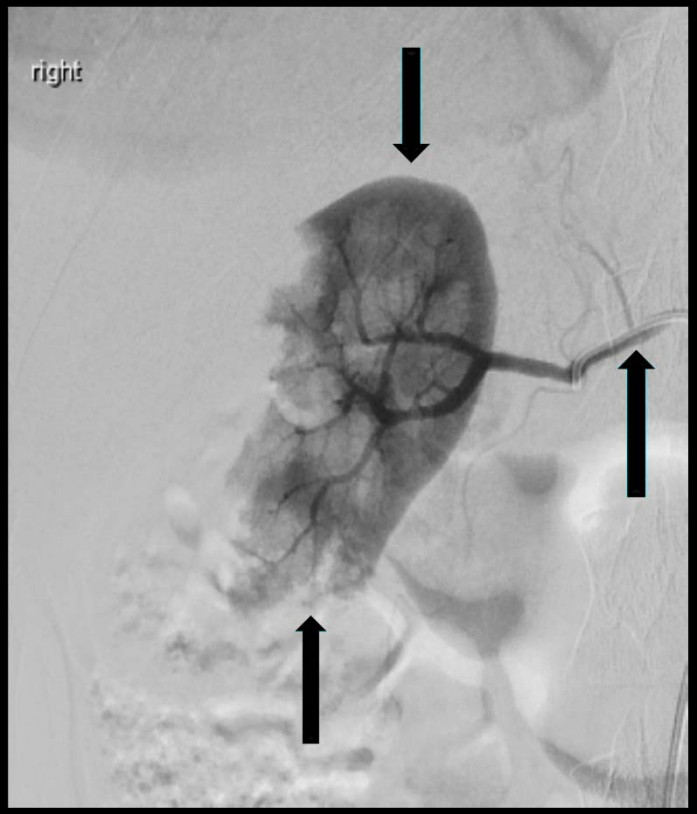
- Enlarged IVC with abnormal early filling
- Enlarged right renal artery and veins
- Two right renal arteries, single draining right renal vein
- No discrete intraparenchymal vascular nidus
- Normal renal parenchymal enhancement
- Normal left lower quadrant

Consultation

- Endovascular and surgical treatment options discussed
- Risks of endovascular treatment discussed including thrombosis, non-target embolization, complete loss of right kidney function
- Risks of non-treatment discussed including cardiomyopathy, hypertension and renal failure

Conventional Angiography

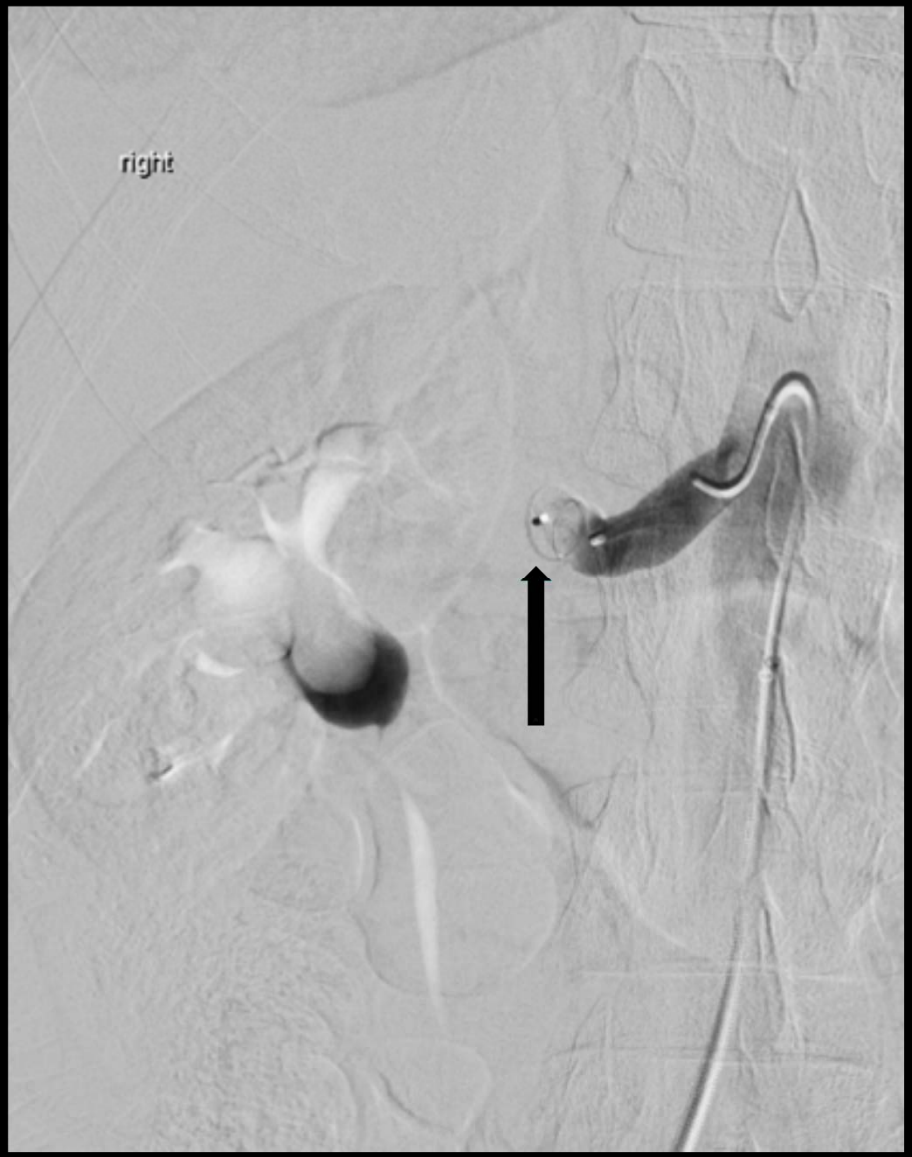




Conventional Angiography Findings

- Two right renal arteries, with a normal renal artery supplying 60-70% of the renal parenchyma
- Enlarged IVC with early filling via dilated arterial inflow and venous outflow
- No intra-parenchymal nidus
- Minimal parenchymal enhancement via abnormal arterial inflow

Angiogram – Post-Embolization



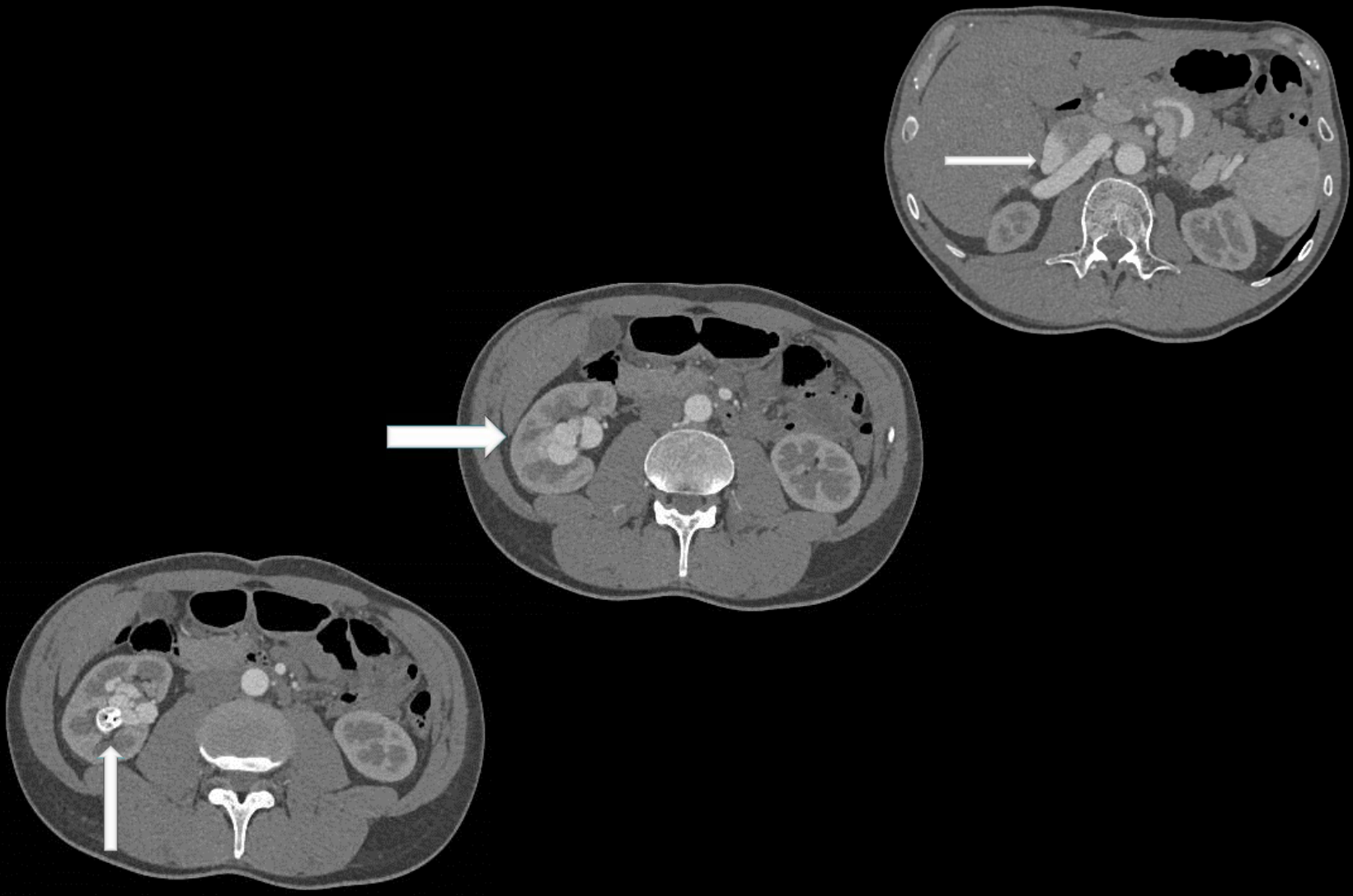
Angiogram Findings – Post-Embolization

- 14 mm Amplatzer vascular plug (AVP) deployed in proximal arterial inflow after appropriate measurements were taken (10 mm diameter inflow artery)
- Stable position of AVP
- Complete occlusion of arterial inflow

Clinical Course

- Uneventful recovery
- Discharged home after 4 hours
- Asymptomatic
- Follow-up CT scan in 3 months

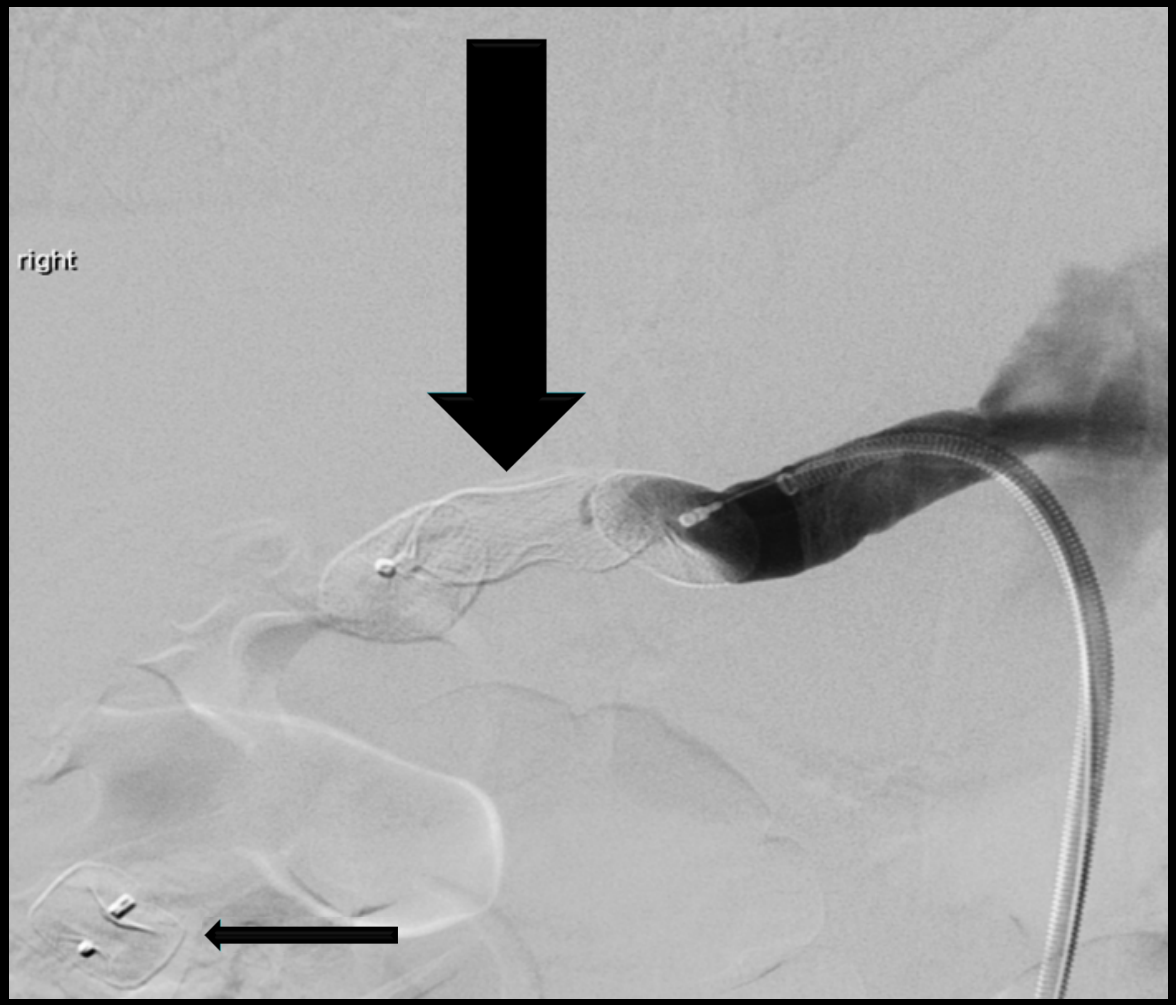
Follow-up CT



Follow-up CT Findings

- Early opacification of right renal vein and ongoing flow through fistula
- Distal migration of Amplatzer plug
- Normal renal parenchymal enhancement

Angiogram – Post 2nd Embolization



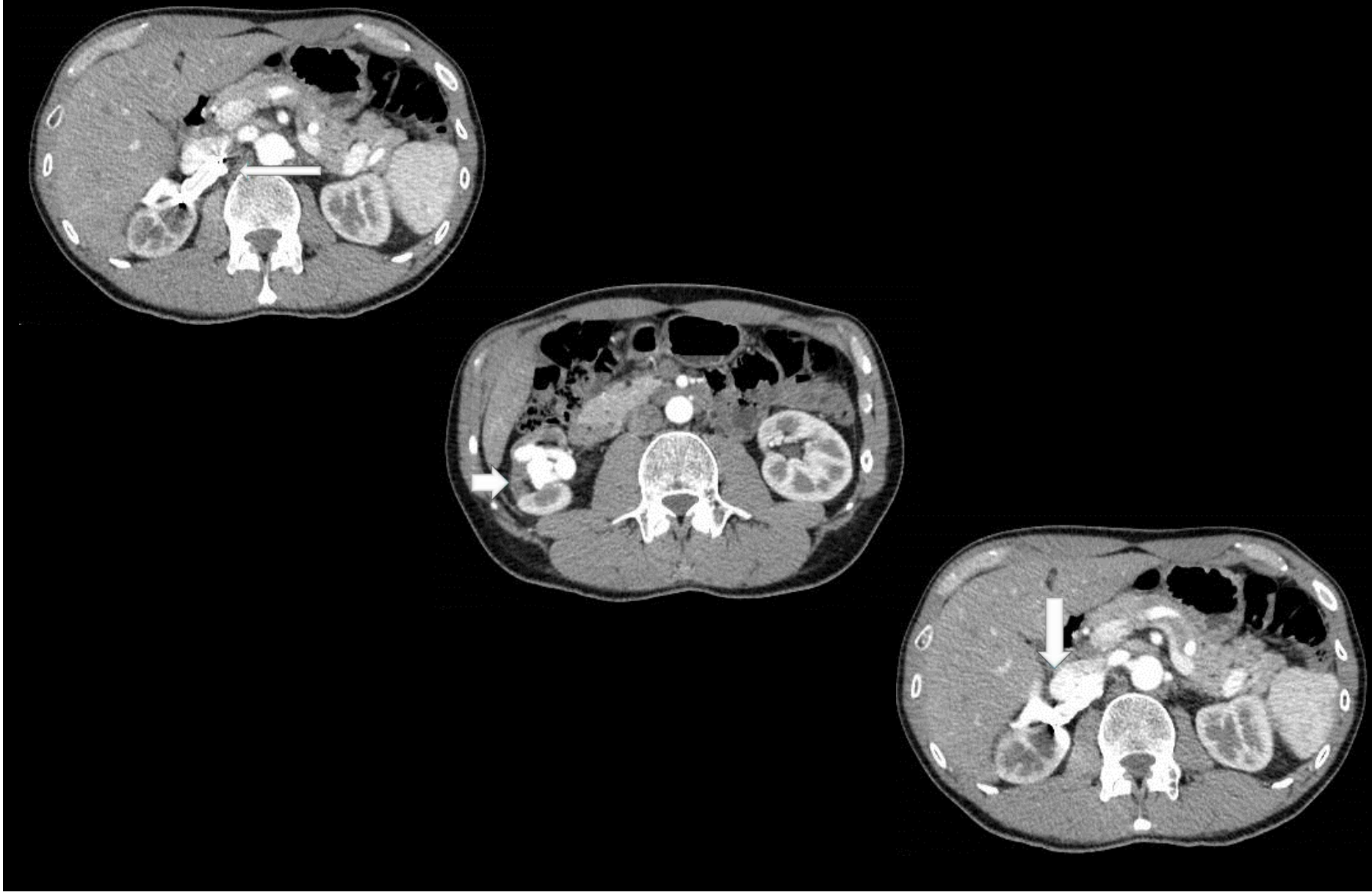
Angiogram Findings - Post 2nd Embolization

- Distal migration of 1st AVP (14 mm)
- Deployment of Amplatzer II plug (20 mm) in the proximal feeding renal artery
- No flow in fistula

Clinical Course

- Uneventful recovery, discharged home after 4 hours
- Asymptomatic
- 3 month routine follow-up CT

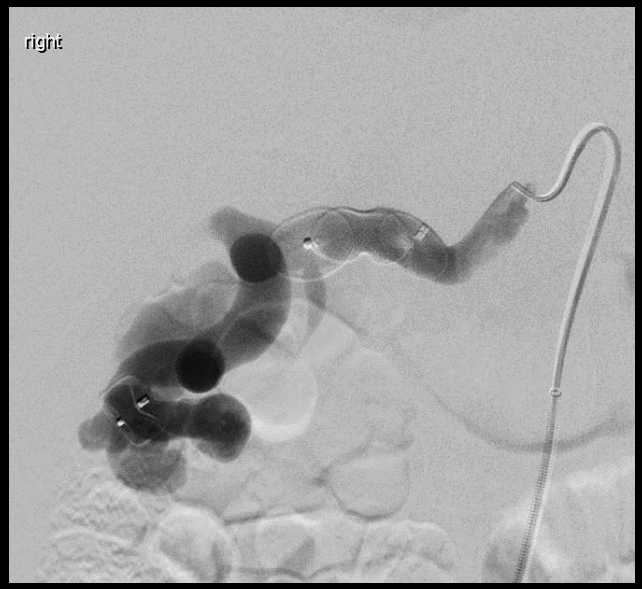
CT - Post 2nd Embolization

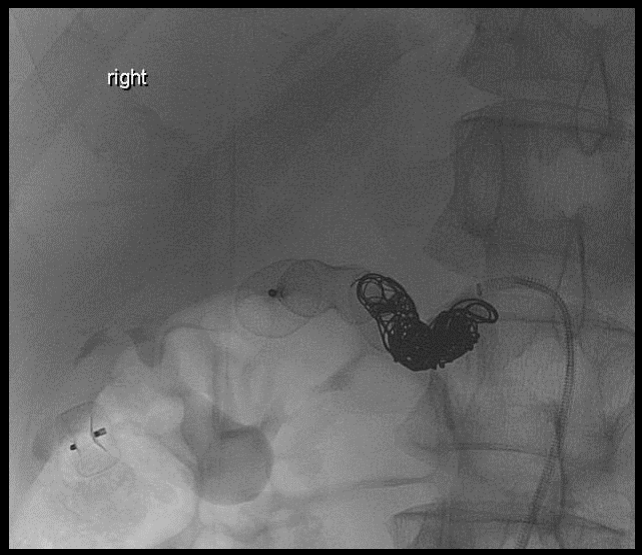


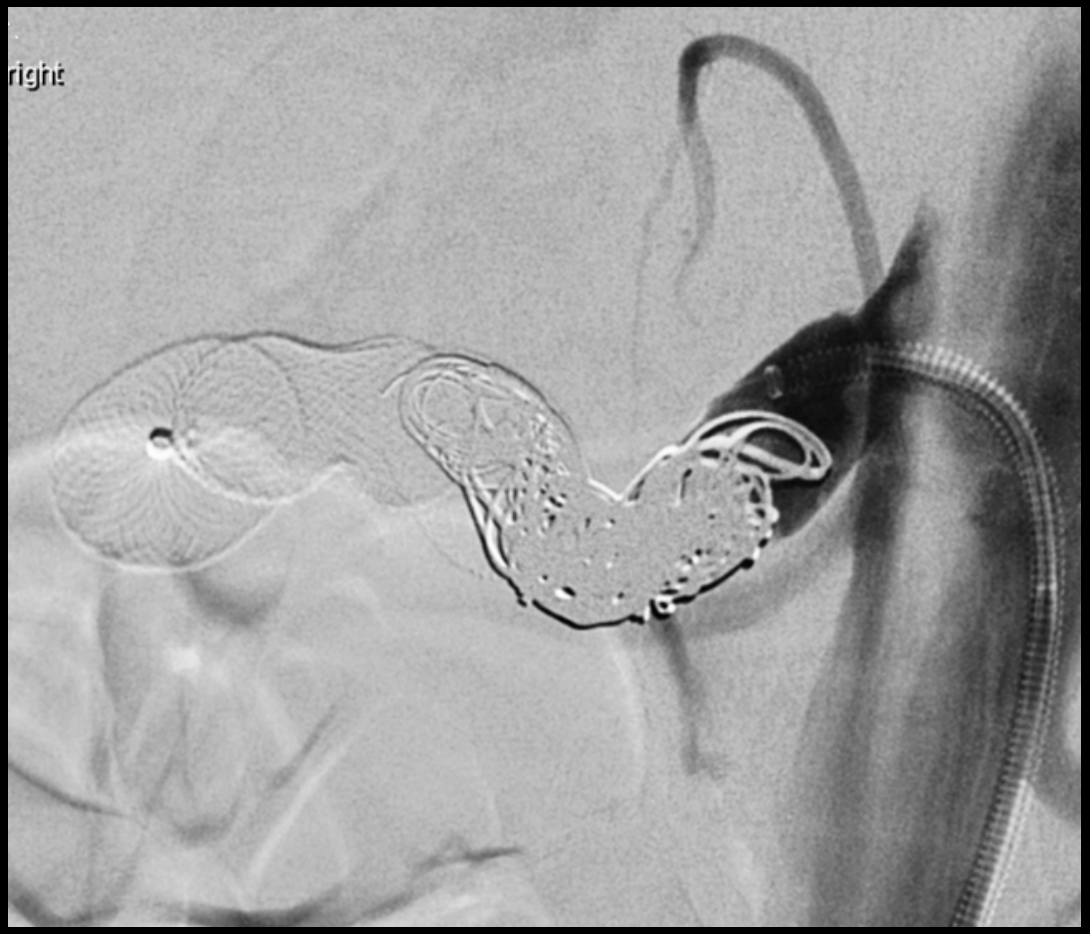
CT Findings - Post 2nd Embolization

- Stable position of Amplatzer II plug
- Lower pole renal parenchymal infarct with volume loss
- Patent fistula with early filling of the right renal vein emptying into the IVC

Angiograms – 3rd Embolization







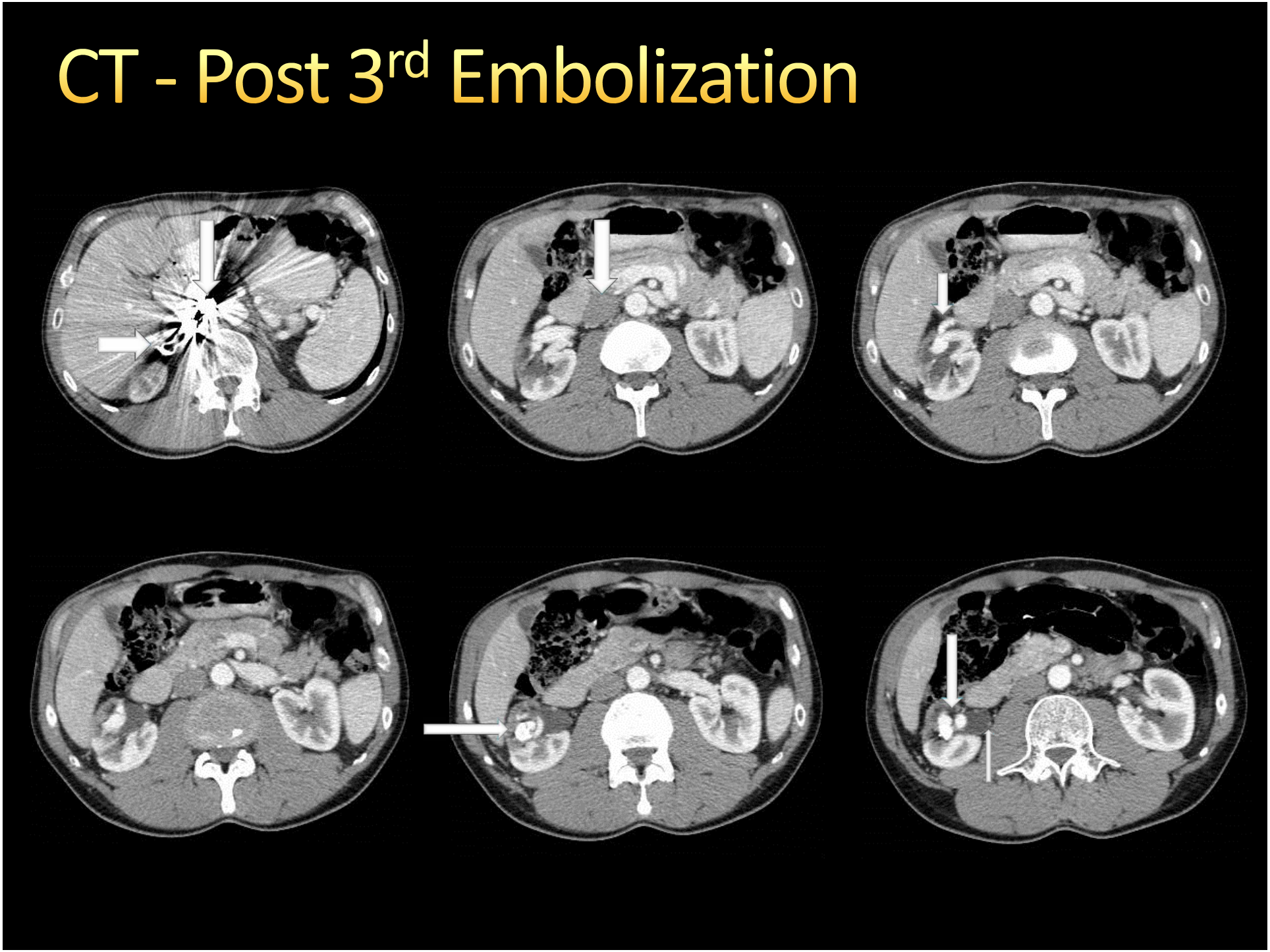
Angiogram Findings – 3rd Embolization

- Patent fistula pre-embolization
- Embolization with variable sized Interlock retractable coils, with AVP II serving as protection device, followed by Gelfoam
- Result: No flow distal to coils

Clinical Course

- Uneventful recovery with discharge home after 4 hours
- At 3 months, mild right flank pain, afebrile, microscopic hematuria
- Routine 3 month follow-up CT

CT - Post 3rd Embolization



CT Findings – Post 3rd Embolization

- Stable position of Amplatzer plugs and coils
- No early filling of IVC
- Ongoing venous opacification due to normal parenchymal drainage
- Reduced size of IVC and opacified draining veins
- Progressive ischemia and atrophy of antero-inferior pole with approximately 20-30 % renal parenchymal loss
- Endothelial enhancement likely secondary to the infarct and consequent inflammation

Clinical Course

- Reassured and managed with oral analgesics
- Told to call our booking agent if hematuria and pain persists

Discussion

- An Amplatzer vascular plug (AVP) was selected as the optimal first choice for transarterial embolization of this large renal AVF
- The AVP is large, relatively cheap, and when deployed it remains firmly attached to its delivery cable
- The AVP can be re-constrained and repositioned and it can serve as a protection device against non-target embolization

Key Takeaways

- The first line therapy for renal AVF is an embolization procedure
- Non-target embolization is a major concern, which could have happened given the migration of our first AVP
- Given the high velocity flow, a larger AVP likely would not have migrated, but even the second 20 mm AVP was not permanently occlusive
- Using the AVP as a dual protective and embolization device is an effective treatment option, as illustrated by augmentation with coil embolization