CIRA Case of the Week

January 2016

Case courtesy of Drs. Sachin Modi and David Valenti

McGill University

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Clinical History

- 34 year old male. Chronic renal failure.
- 2 failed renal transplants.
- Left brachiocephalic fistula. Home dialysis.

Clinical History

- Presented initially in November 2012 with thrombosis of fistula and a stenosis in the left subclavian vein lateral to the left internal jugular vein.
  - Treated with a 12 mm balloon.
- Subsequently treated in October 2013, January 2014 and June 2014 at the same location with 12 mm balloons.

Clinical History

- December 2014 – fistula not functioning.
- Referred for placement of a permanent dialysis catheter. Placed via right internal jugular.
- Presents in January 2015 with extreme swelling of his left hand and arm. Cannot use arm/hand for typing etc.

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Angio

Angio

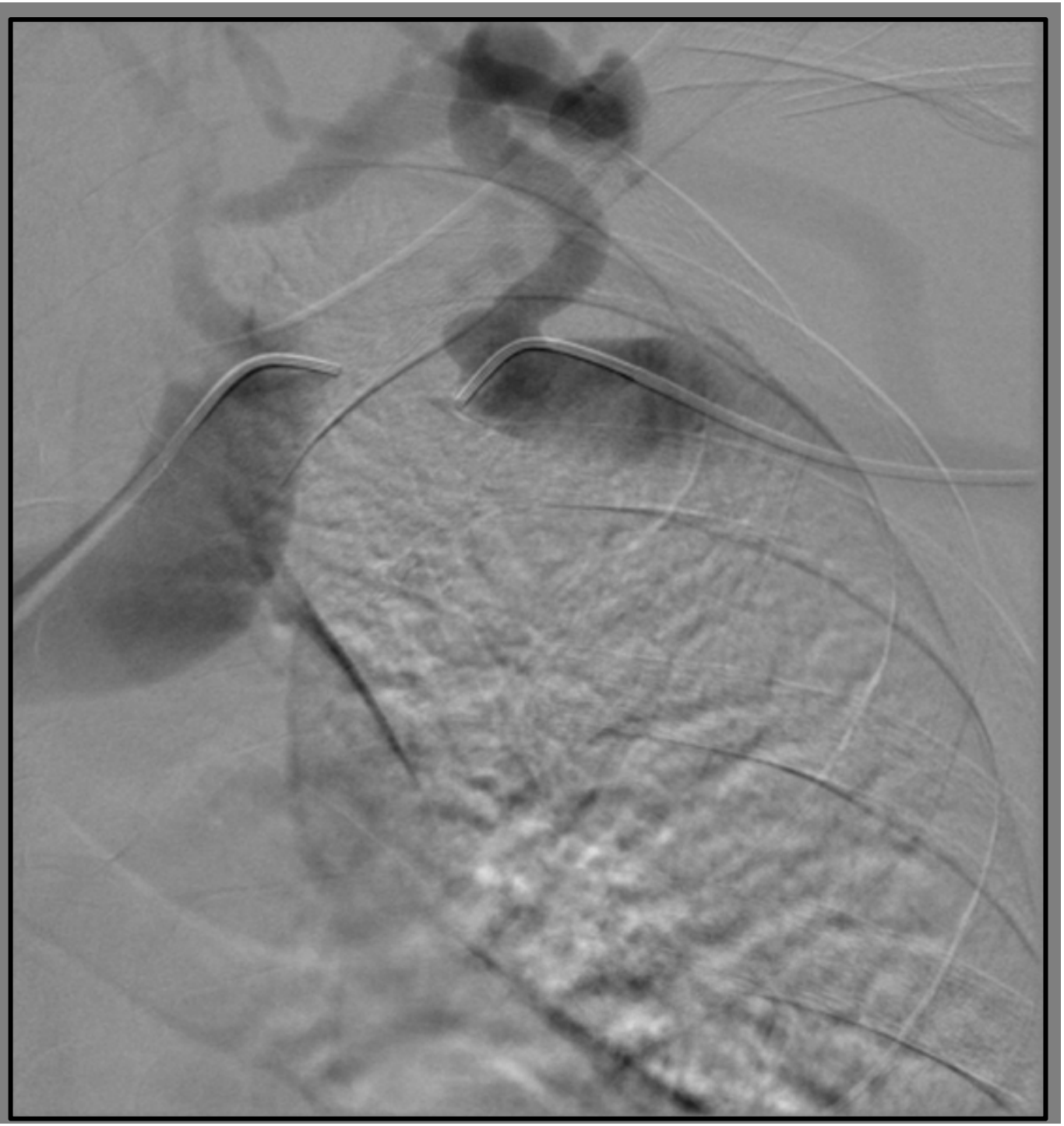
Findings

- Initial puncture of the cephalic vein (fistula) performed in the upper arm.
- Fistulogram confirms a complete occlusion involving brachiocephalic and subclavian vein with multiple collaterals.
- Multiple attempts to cross were unsuccessful.
- Brachial vein punctured in upper arm to obtain better angle of approach. Multiple attempts unsuccessful.

Findings

- Right common femoral vein access obtained. Long sheath placed and KMP catheter placed in subclavian centrally.
- Venogram performed simultaneously from arm and groin to fully delineate occlusion (~ 1 cm).

Angio



Findings

- 20 mm loop snare placed via the groin and deployed at the medial aspect of the occlusion.
- Angled sheath placed from the arm and TIPS access sheath used.
- A Rosch-Uchida needle 21g was placed at the lateral aspect of the occlusion.

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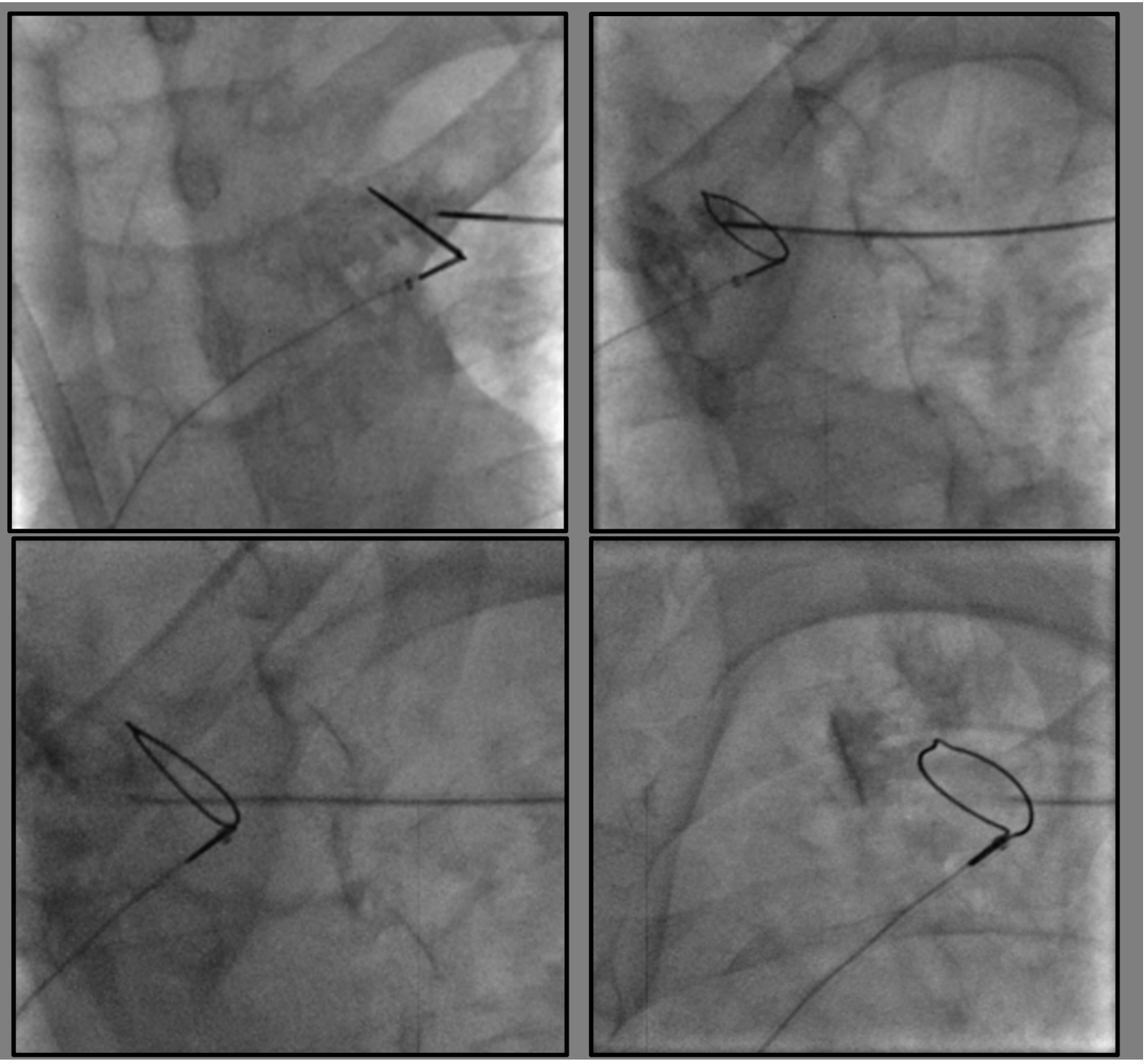


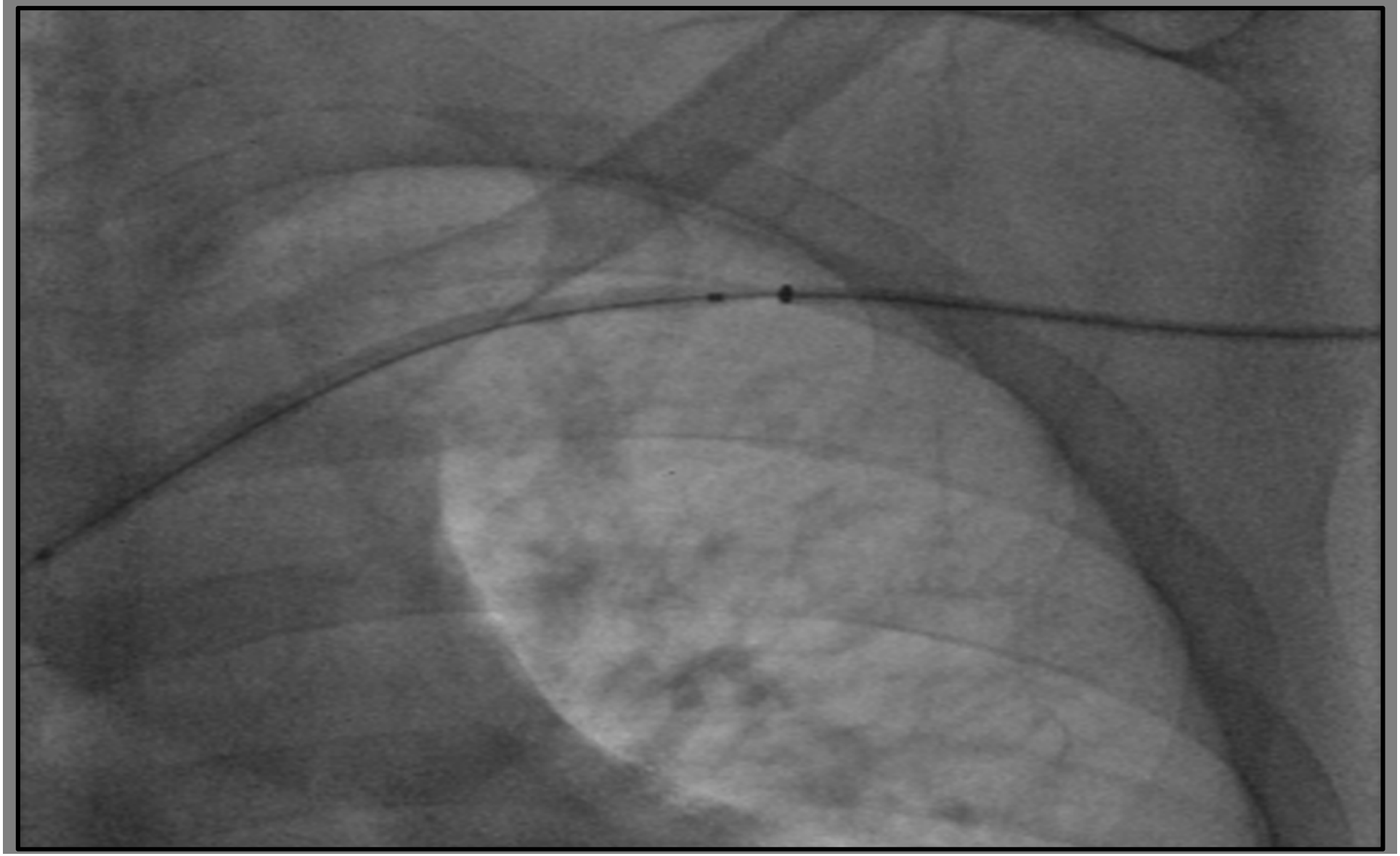
Findings

- Fluoroscopy and multiple projections performed (LAO, RAO, cranial and caudal) to determine the ideal angle of approach with the needle.
- Three needle passes were required to successfully puncture the medial vein segment. The catheter was advanced over the needle and an exchange length guidewire was advanced.
- The snare was used to capture the guidewire and pull it out through the groin sheath.

Findings

- Initially a 4 mm balloon was passed and inflated over the occluded segment to dilate the tract.
- Following this a 10 mm x 6 cm self expanding metal stent (covered) was placed across the occlusion and post dilated with a 10 mm balloon.
- Slightly slow flow through the stent and so was extended laterally with a self expanding non covered metal stent (10 mm x 4 cm).

Angio



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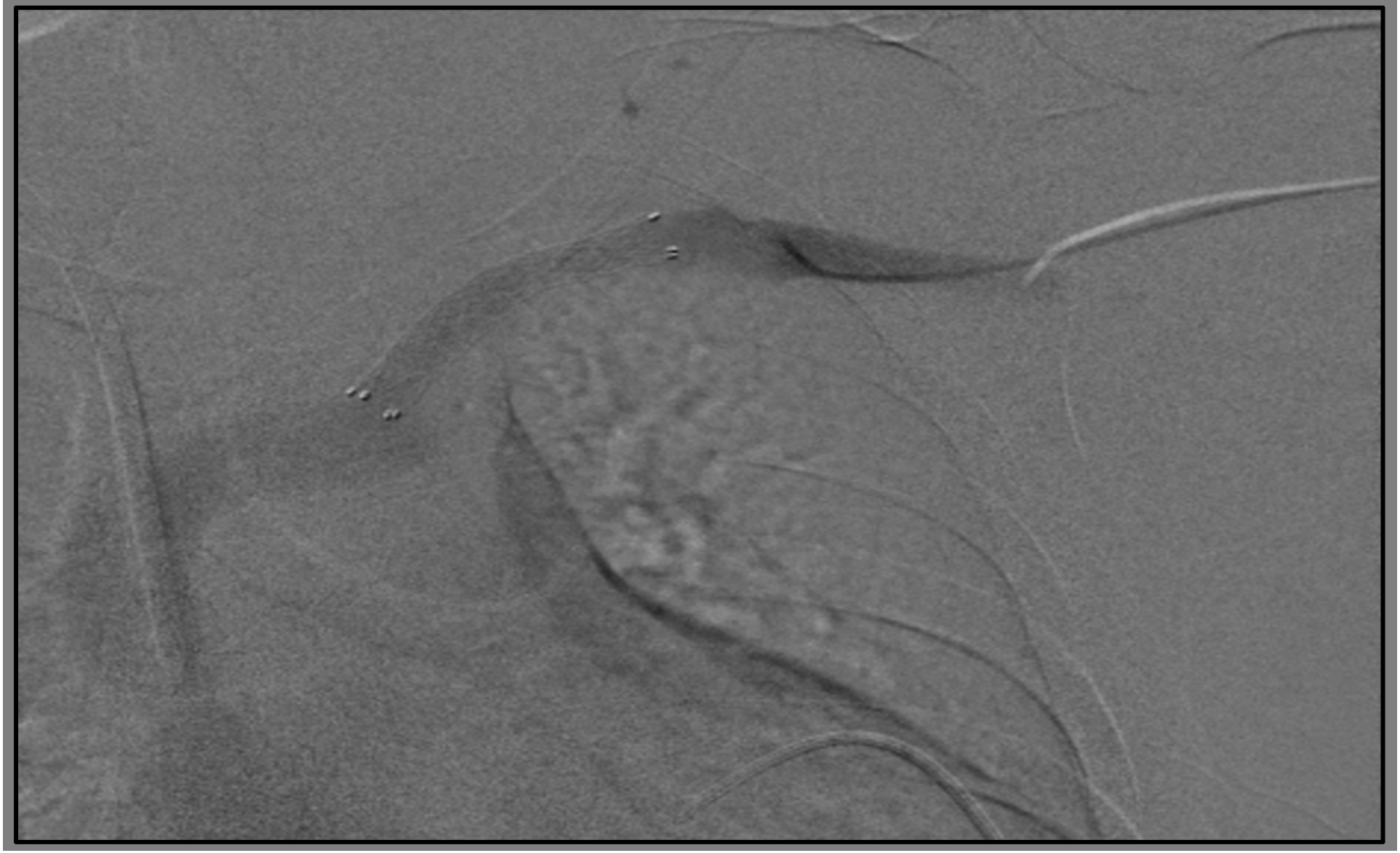

Findings

- Improved flow through previously occluded segment.
- Reduced flow through collaterals.
- Patient reports arm feels less swollen and fingers more mobile.
- Swelling completely resolved after 3 days.
- Currently dialysing through fistula.

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Discussion

- Patients with ESRF on hemodialysis – central veno-occlusive disease due to hemodynamic stress and internal injury related to multip;le catheter insertions is well described.
- 3-38% reported incidence.
- Chronically occluded veins are difficult to treat with standard guidewires and catheters. Failure rate as high as 24%.

Discussion

- Sharp recanalization has been reported in the literature.
  - Farrell T, et al. JVIR (1999) – reported a case series of 6 patients. 5 being successful. One occlusion too long to cross safely.
  - Athreya S, et al. BJIR (2009) – reported 4 cases with a Colapinto needle. All technically successful. One case with mediastinal extravasation.

Discussion

- Successful recanalization likely with short (1-2cm) occlusions.
- There is a risk of mediastinal injury and cases should be performed with fluroscopic assessment in multiple planes.
- Technique can prevent or delay surgery in some cases.
- McGuckin J.F, et al. (Endovascular Today, 2009) describe a technique using a RF wire. 84% success rate.

Why this case?

- Almost immediately improved patient symptoms.
- Controlled risk.
- Thinking outside the box and knowing what you have available on your shelf!

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References

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- Schillinger F, Schillinger D, Montagnac R et al. Post catheterisation vein stenosis in haemodialysis: comparative angiographic study of 50 subclavian and 50 internal jugular accesses. Nephro dial transplant 1991.6:722-724.
- Farrell T, Lang E.V, Barnhart W. Sharp recanalization of central venous occlusions. JVIR 1999 (2 Pt 1):149-54.
- Athreya S, Scott P, Annamalai G et al. Sharp recanalization of central venous occlusions; a useful technique for haemodialysis line insertion. BJR 2009 82:105-108.
- McGuckin J.F et al. A new pathway for central venous occlusion. Endovascular today 2009 1-3.