

Clinical Case – Deep Vein Thrombosis

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The Controversies in Dialysis Access (CiDA) meeting is the leading educational forum for surgeons, radiologists, nephrologists and medical staff who care for dialysis access patients.

Acute onset of swelling

Female patient 66 years old

Chronic polycystic kidney disease

Interventions

Brachiobasilic fistula 8 months ago

The fistula is working well.

She developed swelling in the left upper limb.



Edema is often associated with central venous obstruction

In this patient collaterals (arrows) are seen in the shoulder, axillary and chest indicating central vein obstruction.



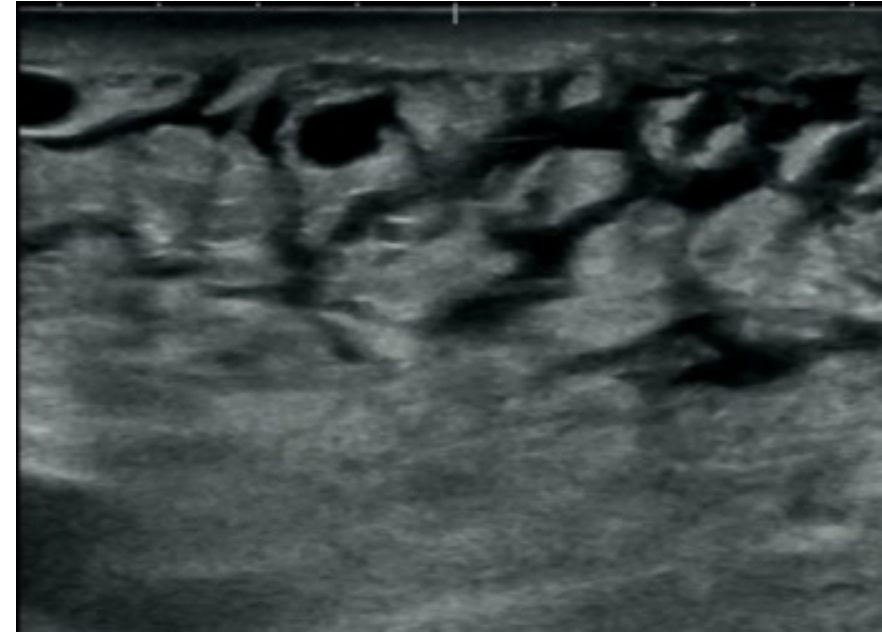
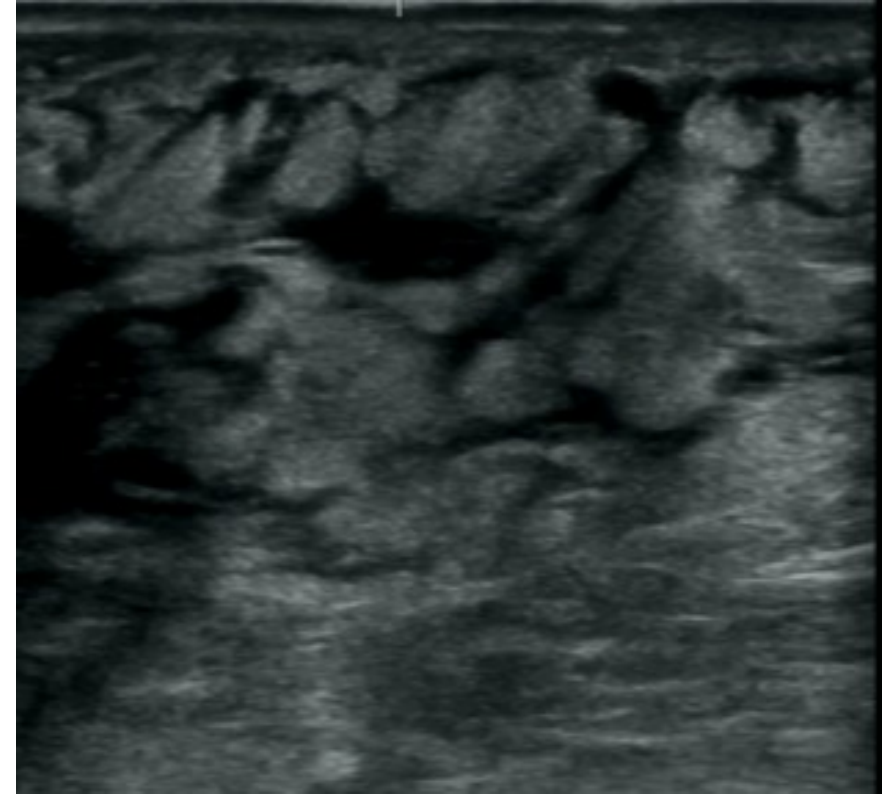
Edema is often associated with central venous obstruction

The collaterals extent into the chest and neck area. The external jugular vein is also very prominent.



Swelling in the forearm and arm

Ultrasound demonstrated fluid in the subcutaneous space in both the arm and forearm. Pitting edema was seen just from applying the ultrasound transducer on the skin.

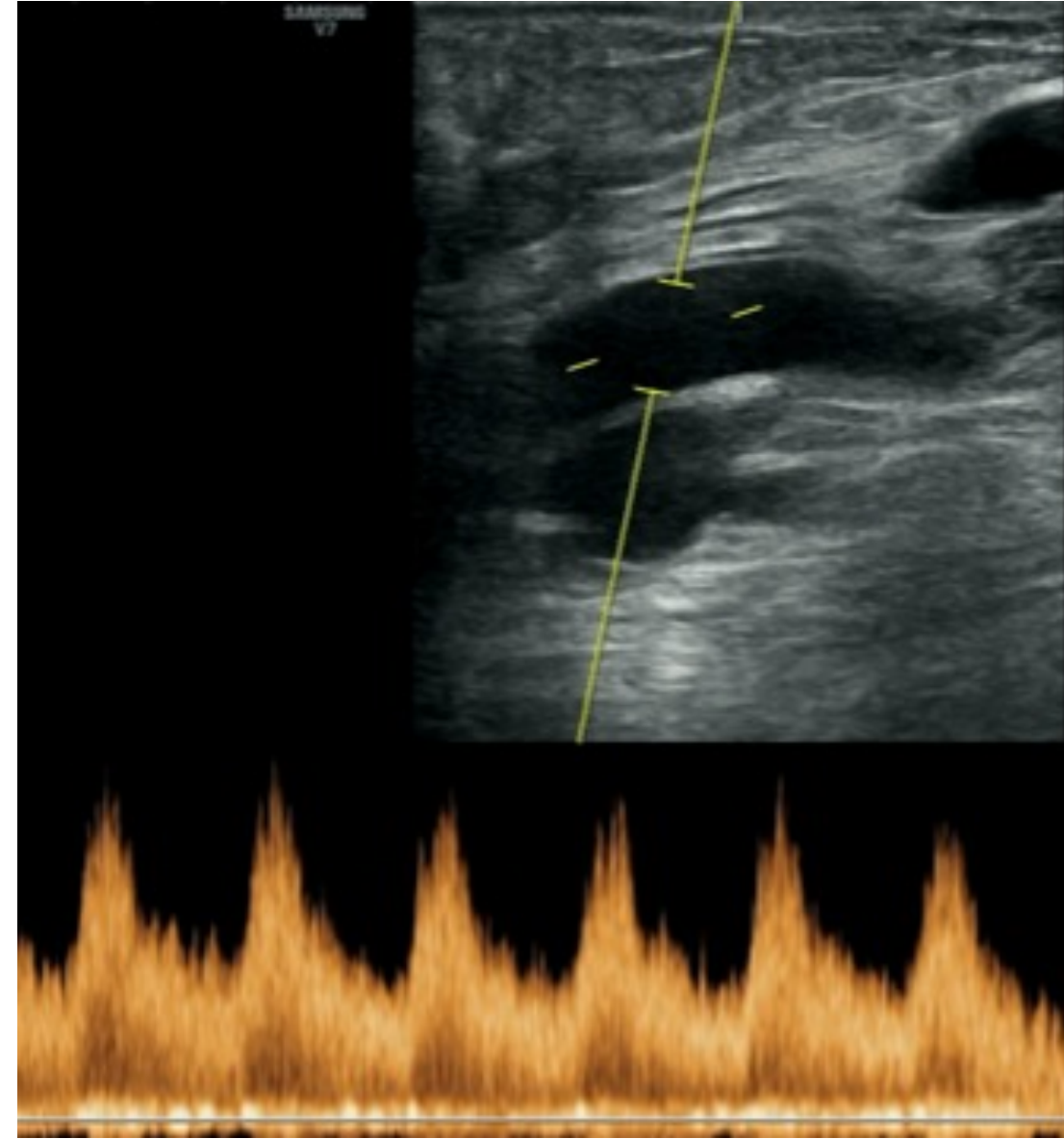


Evaluation of the brachial artery

Dilated artery measuring **8mm** in diameter with flow indicating a properly functioning fistula. Despite the proximal obstruction the flow was just over **2l/min**.

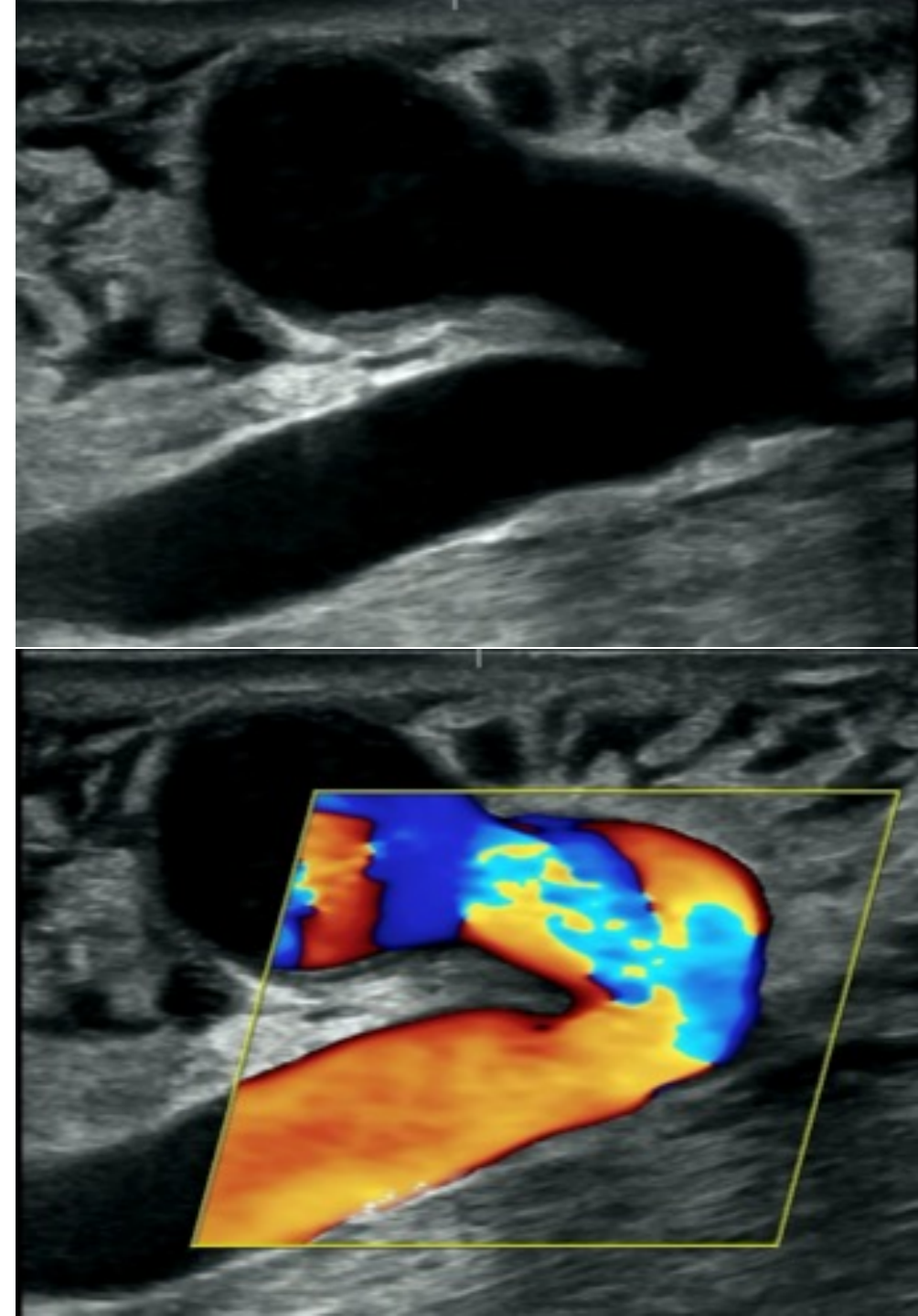
The flow volume measurement at the inflow artery is important as it indicates the fistula function.

The flow volume increases after the fistula creation and due to **flow mediated dilation** the artery increases over time. The diameter of the brachial artery is around **3mm - 4mm**. In this patient the diameter doubled.



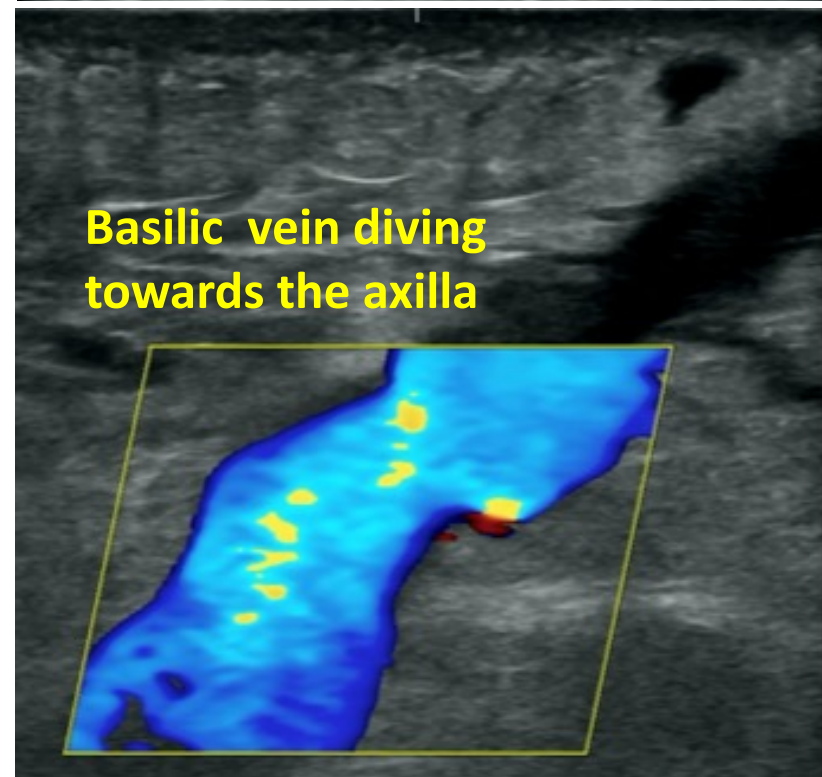
Brachiobasilic anastomosis

The anastomosis to the brachial artery was normal. The flow velocities were somewhat elevated as it is expected. No stenosis was found. A focal juxta-anastomotic dilation was seen.



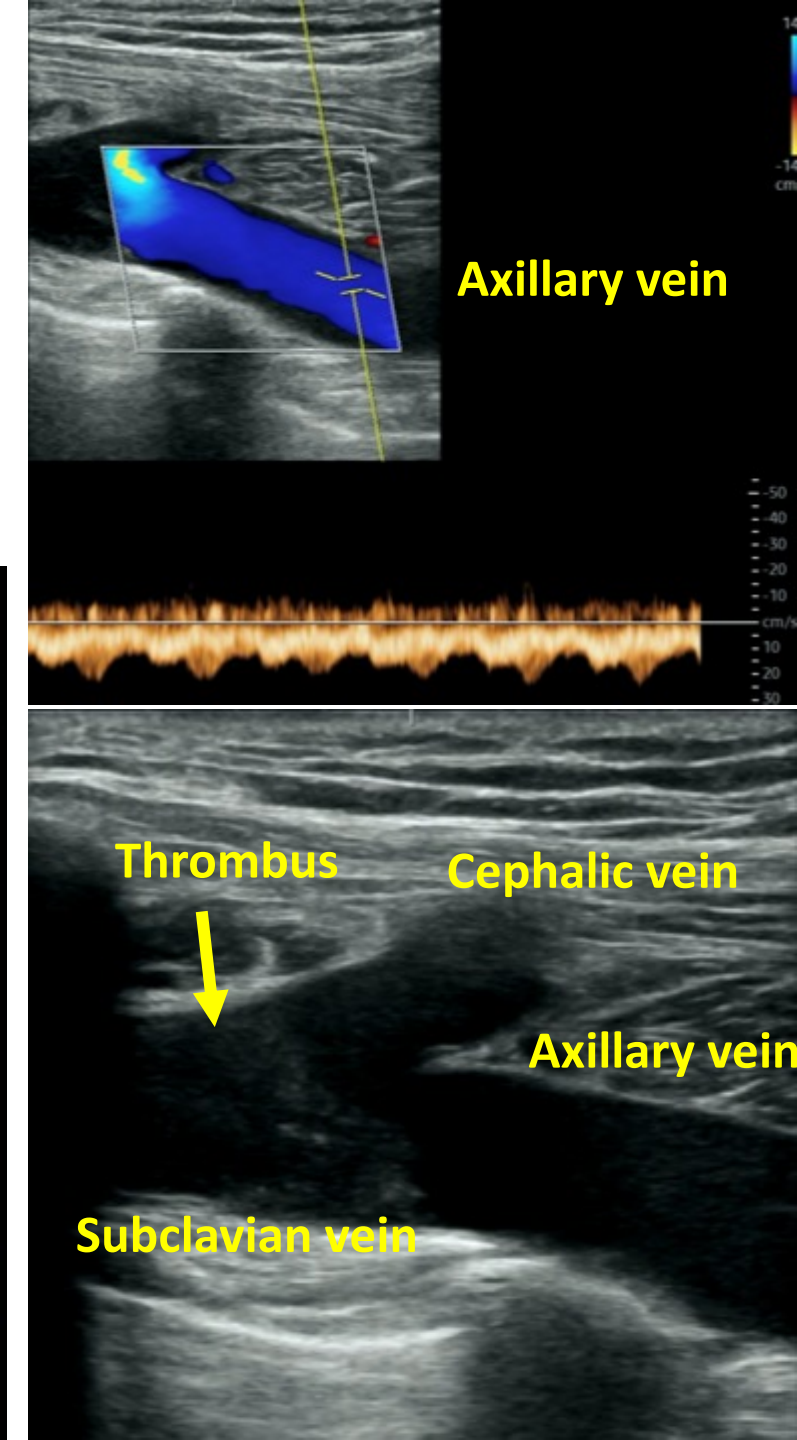
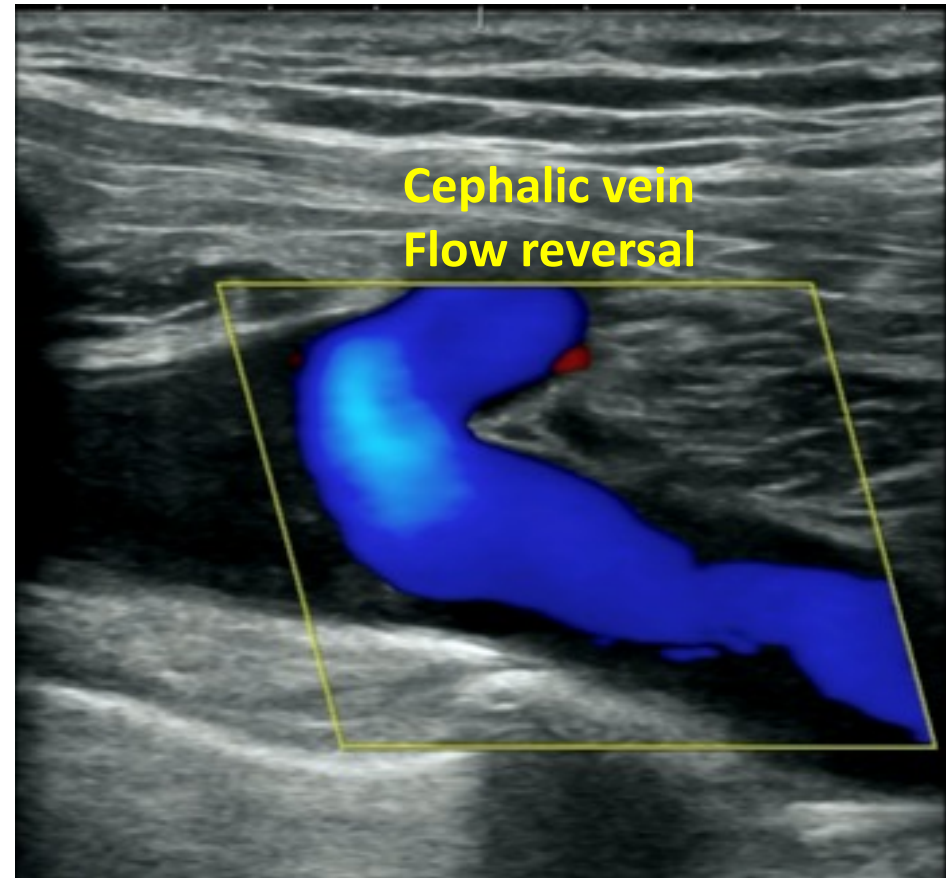
Basilic vein

The basilic vein was dilated with diameters measuring from **6.7mm** to **12.8mm**. No stenosis was found throughout the vein.



Evaluation of the axillary and subclavian veins

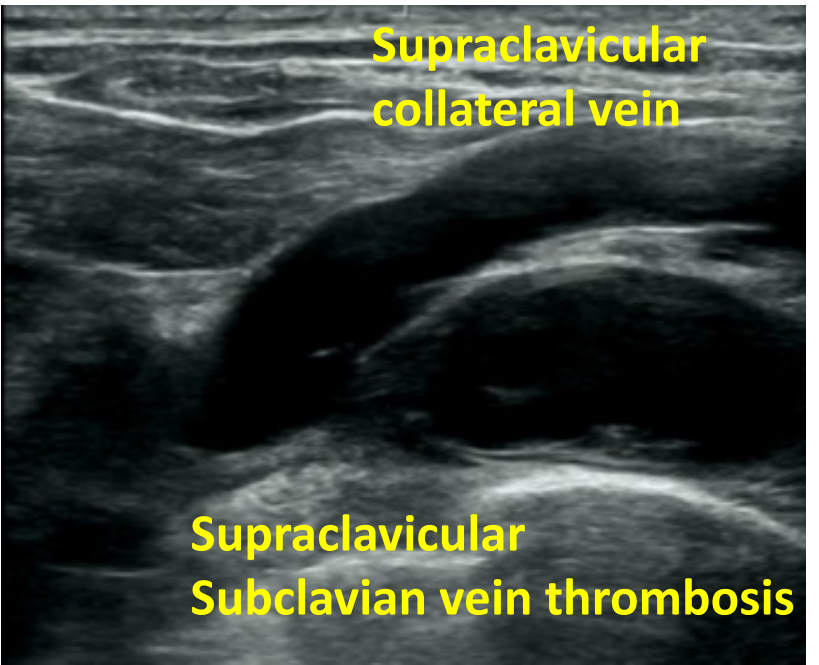
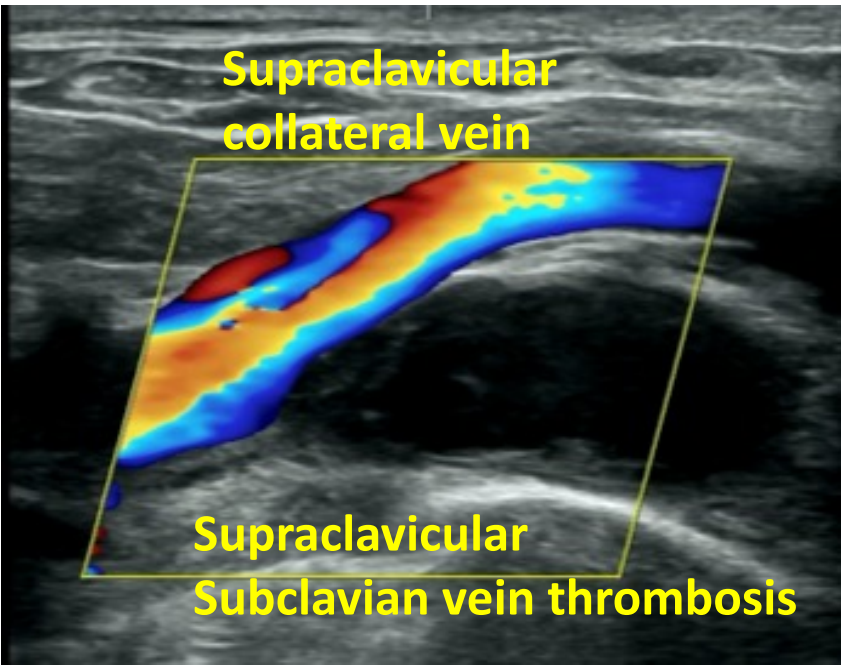
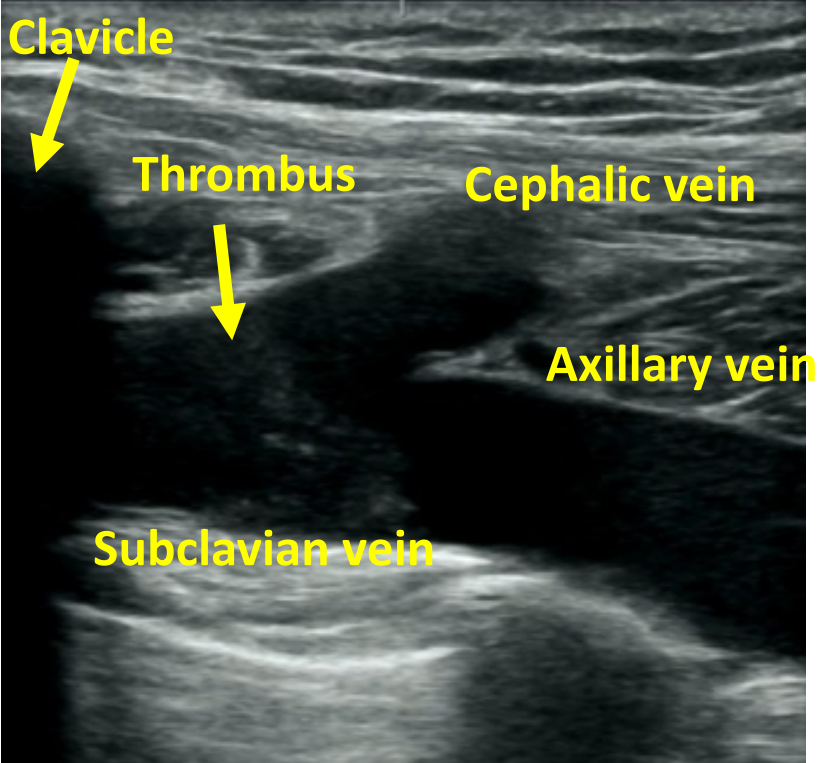
The axillary vein was patent with normal flow pattern despite the thrombotic occlusion of the subclavian vein. This was because the blood was draining through the cephalic vein where the flow was reversed.



Acute subclavian vein thrombosis

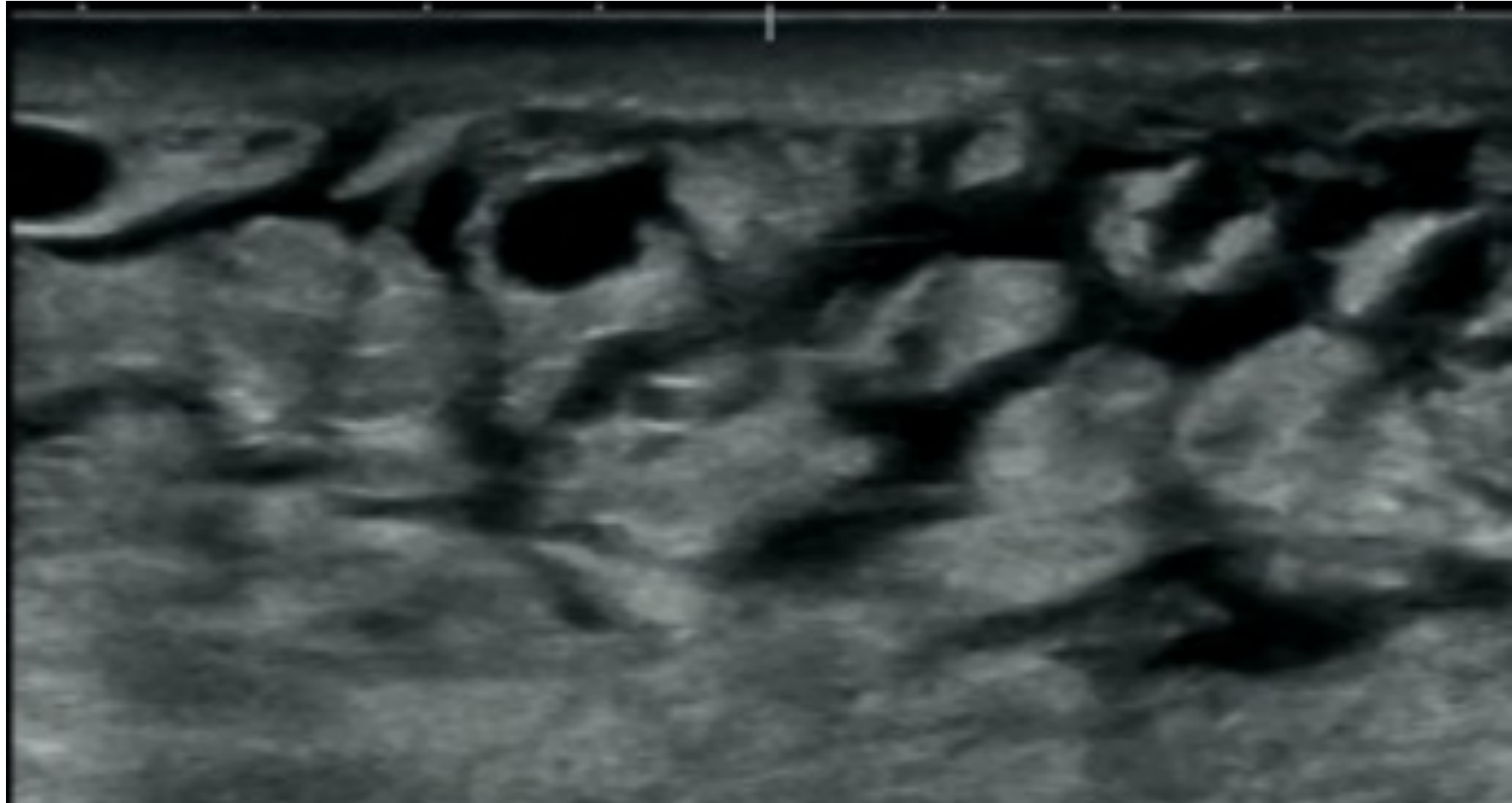
The supraclavicular subclavian vein was thrombosed. Intraluminal material was seen and there was absence of color flow.

A supraclavicular collateral connecting with the cephalic vein directed the flow into the external jugular vein.



Swelling in the forearm and arm

Patients with a functioning dialysis and central vein obstruction have **high venous blood pressure**. This is because the high flow in the fistula has limited outflow leading to **increased venous pressure** and development of **edema and often pain**.



How should this patient be managed?

Is other imaging necessary prior to treatment?

What intervention should be performed?

How and when should this patient be followed-up?



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Patients with central vein obstruction will be discussed at CiDA.

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