CONTROVERSES ET ACTUALITES EN CHIRURGIE VASCULAIRE

CONTROVERSIES & UPDATES IN VASCULAR SURGERY

JANUARY 23-25 2020

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Percutaneously Created AVF problems

Stephen E. Hohmann, MD FACS
Dallas, Texas

ACS

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CONTROVERSES ET ACTUALITES E

CONTROVERSIE

IN VASCULAR

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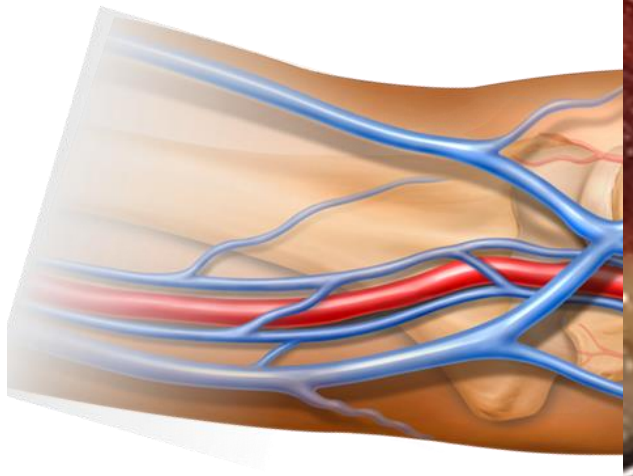
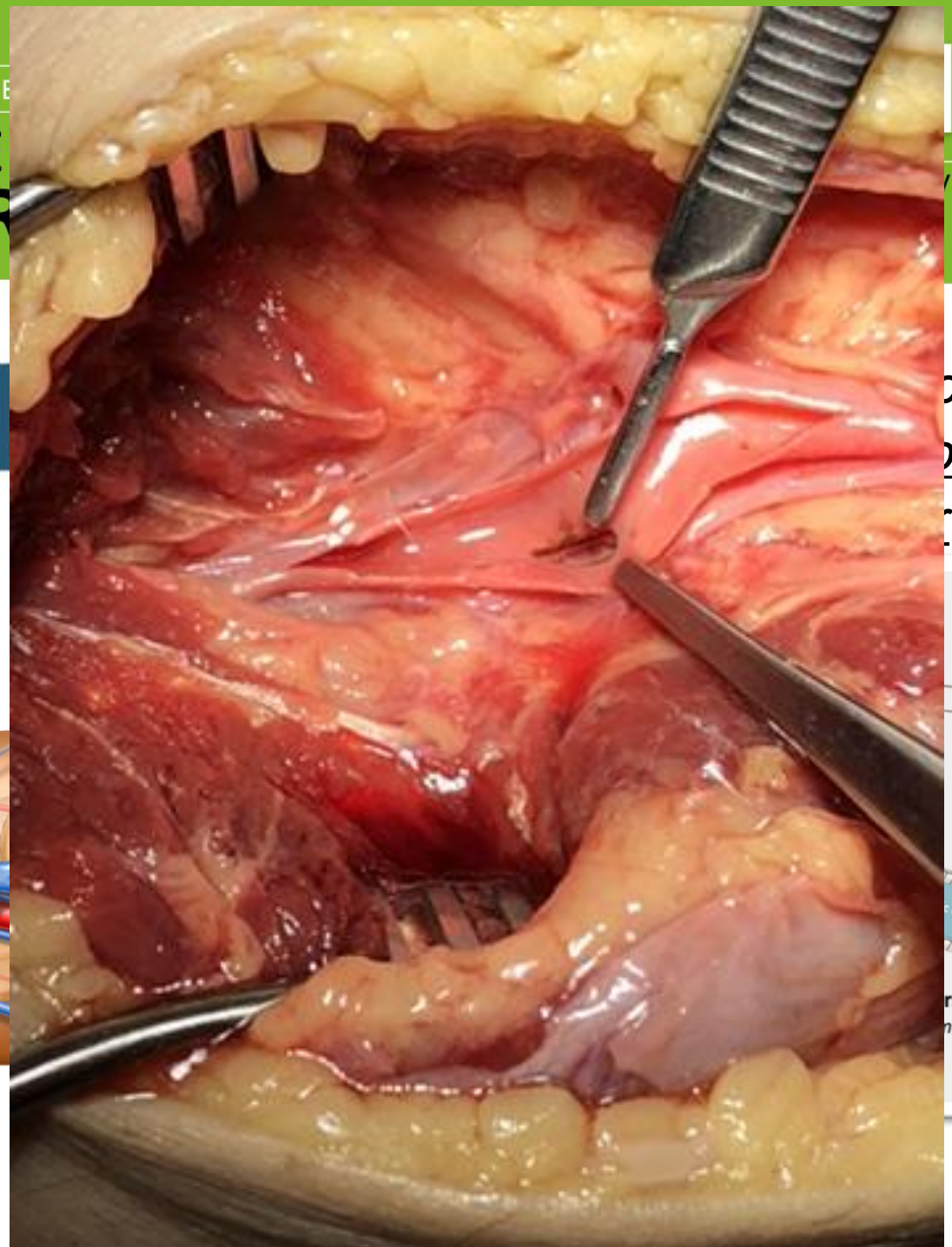
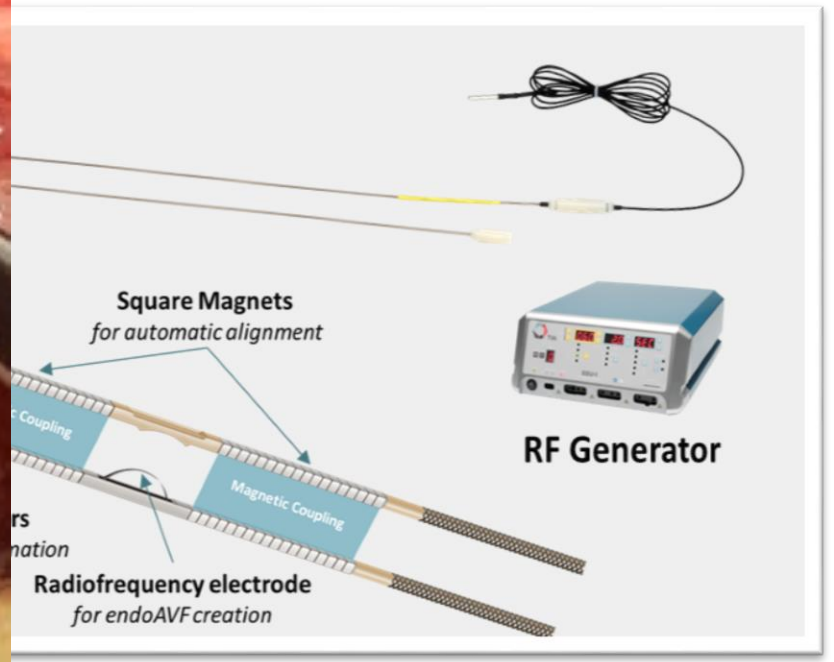
WAVEL

EndoAVF System





om radial artery to radial vein or
o ulnar vein and subsequent flow
r to superficial system

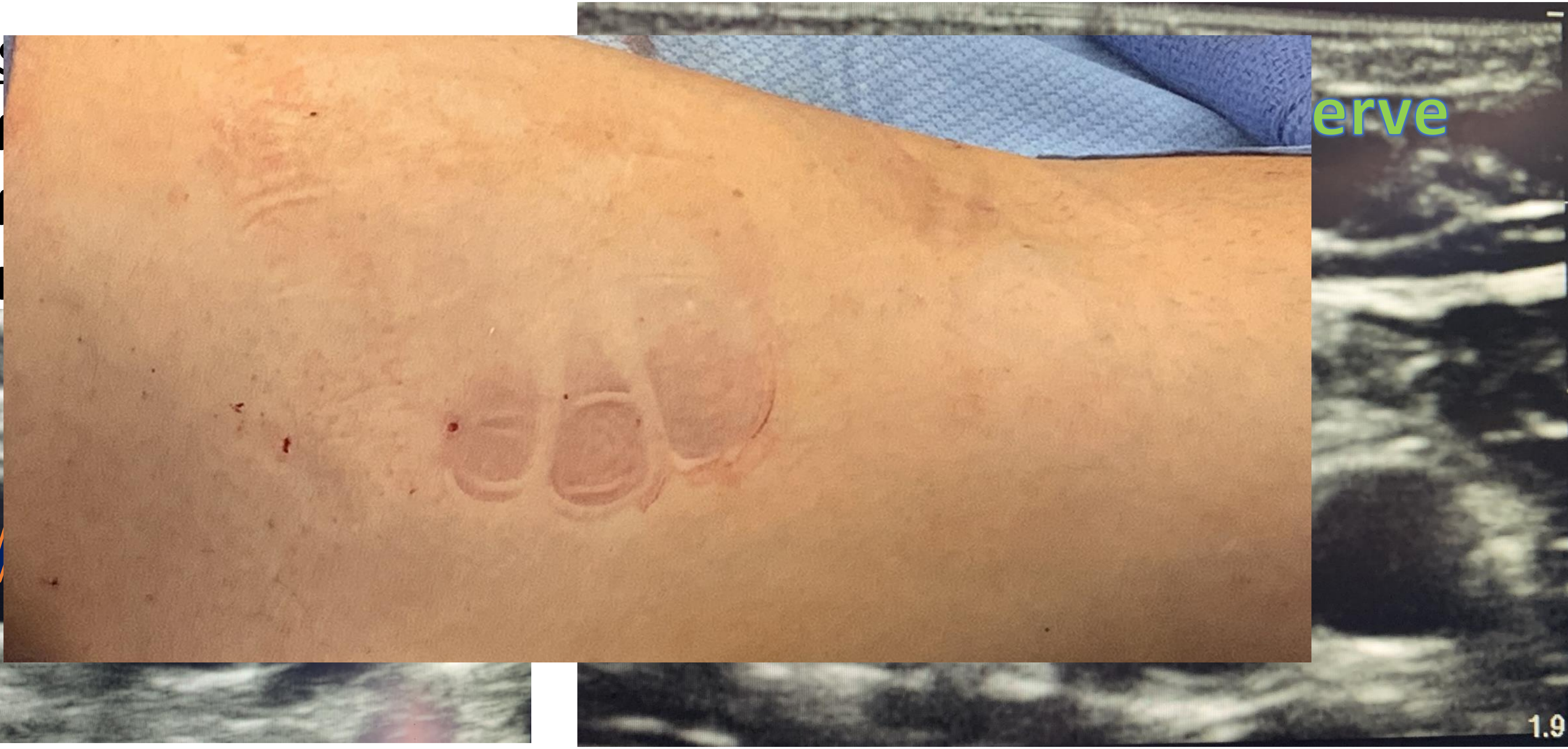


ENDOVASCULAR AVF ISSUES:

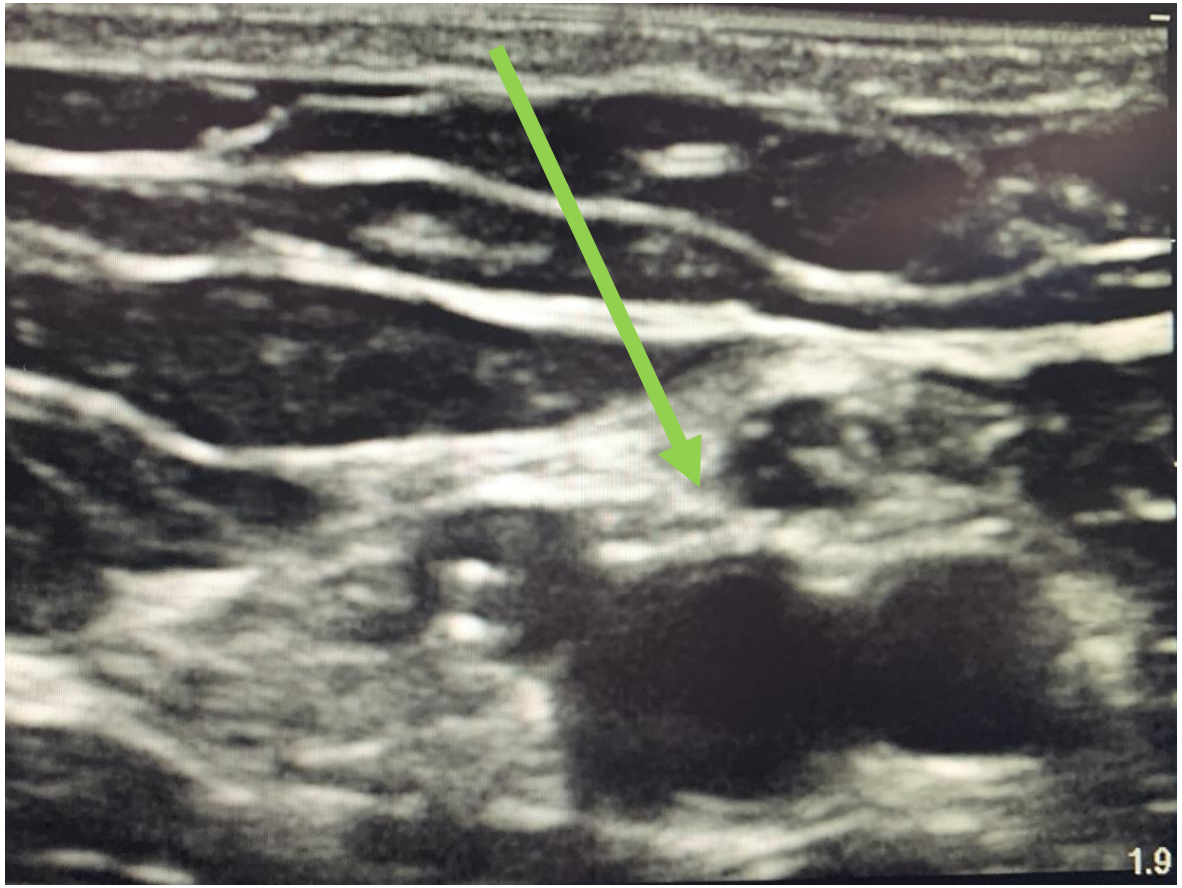
- Access of vessels
- Navigation of vessels
- Activation of radiofrequency
- Embolization
- Non-maturation
- Difficulty with cannulation
- Swelling
- Thrombosis

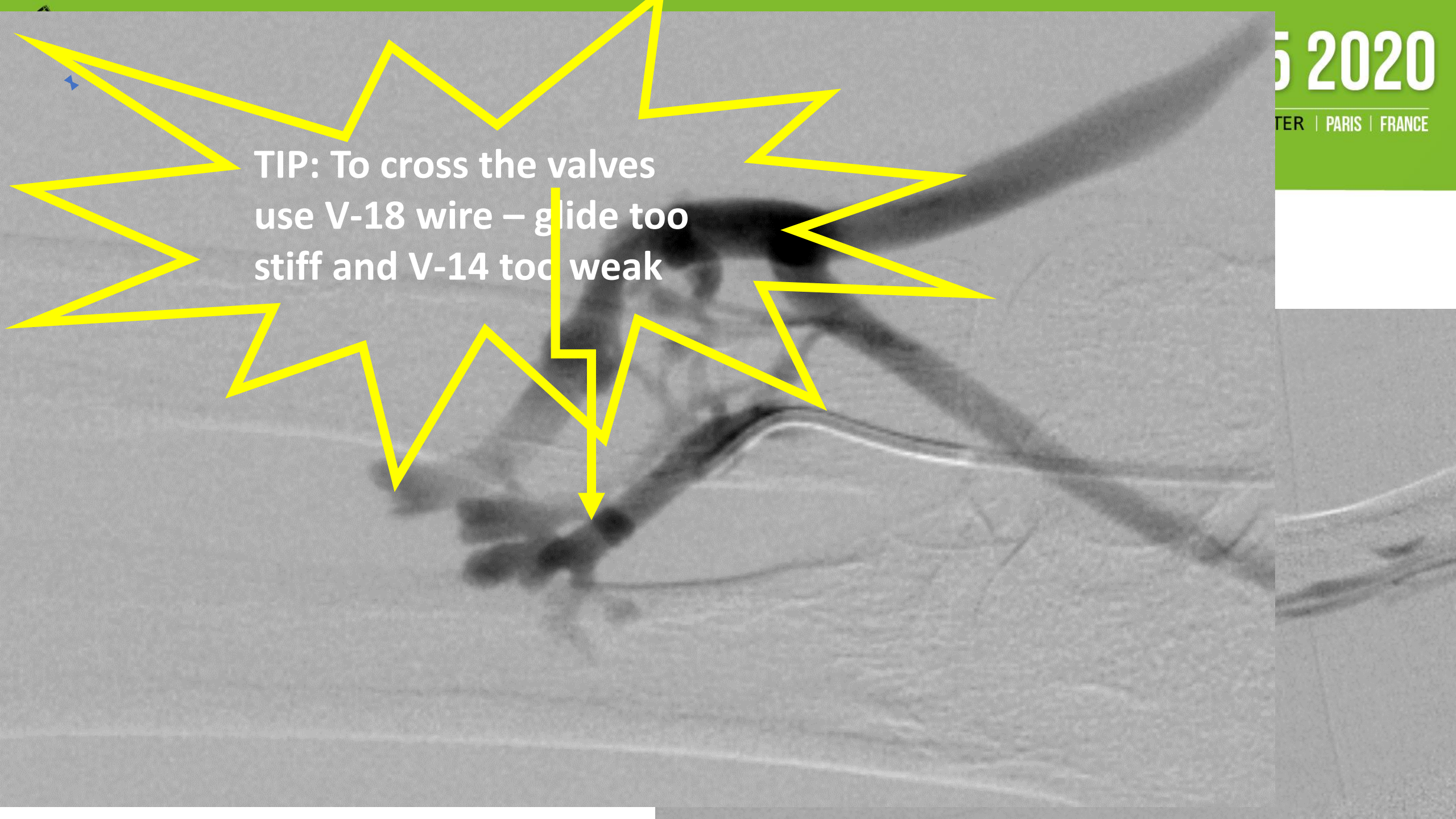
VESS

- Dif
- Dif
- MI



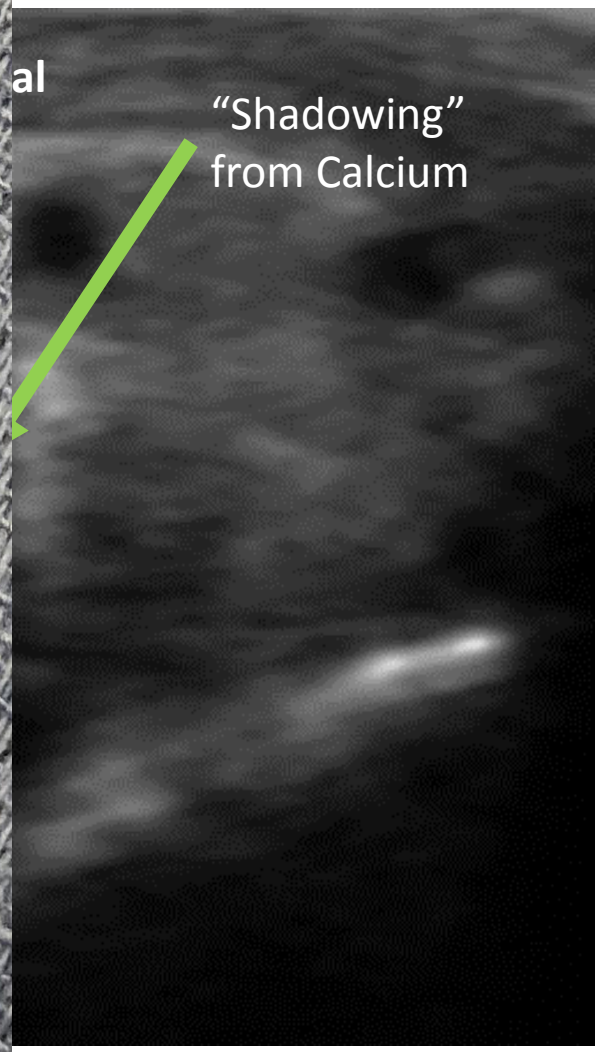
Tip: Use lidocaine to inject around nerve and move away from vessel




TIP: To cross the valves
use V-18 wire – glide too
stiff and V-14 too weak

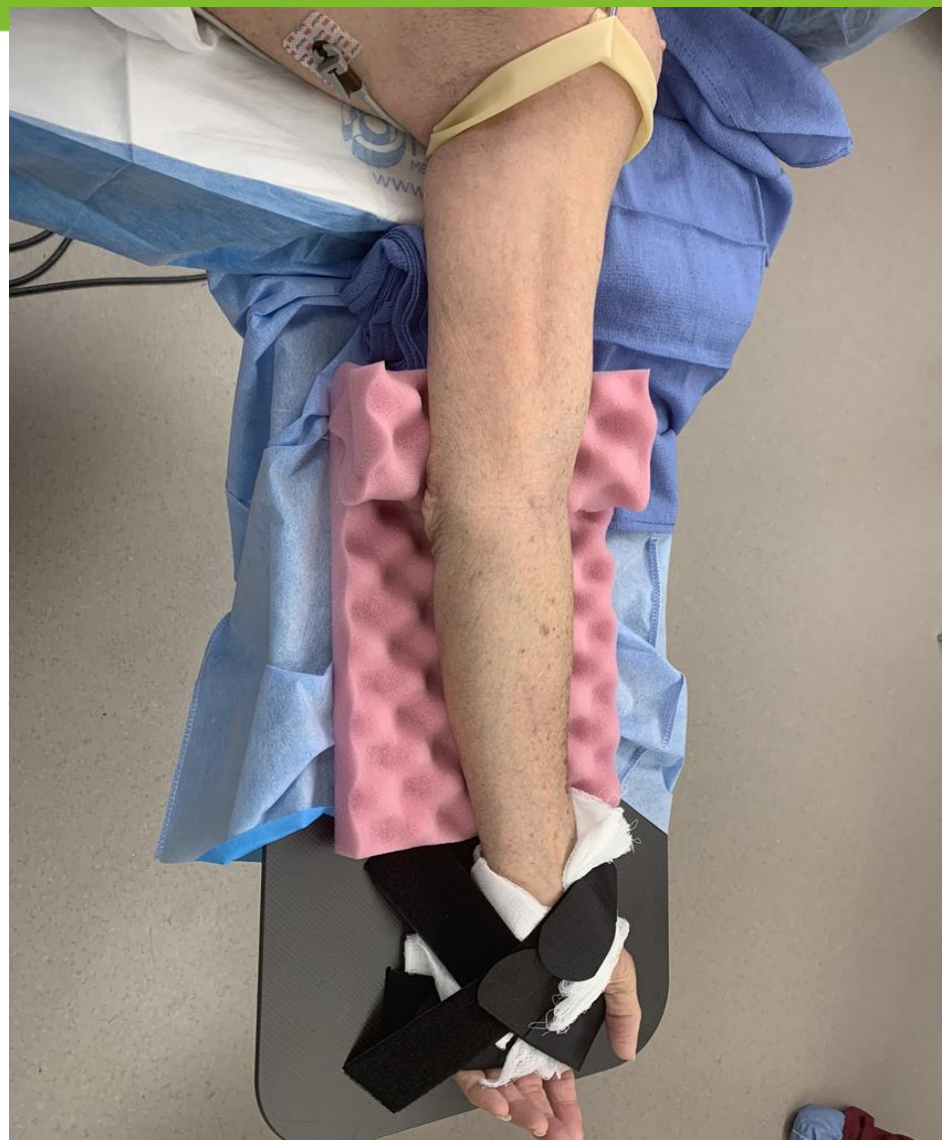
ACTIVATION OF RADIOFREQUENCY

- Main issue is circum
  calcification
- Can activate device t
  times
- Main issue if there is
  complete shadowing

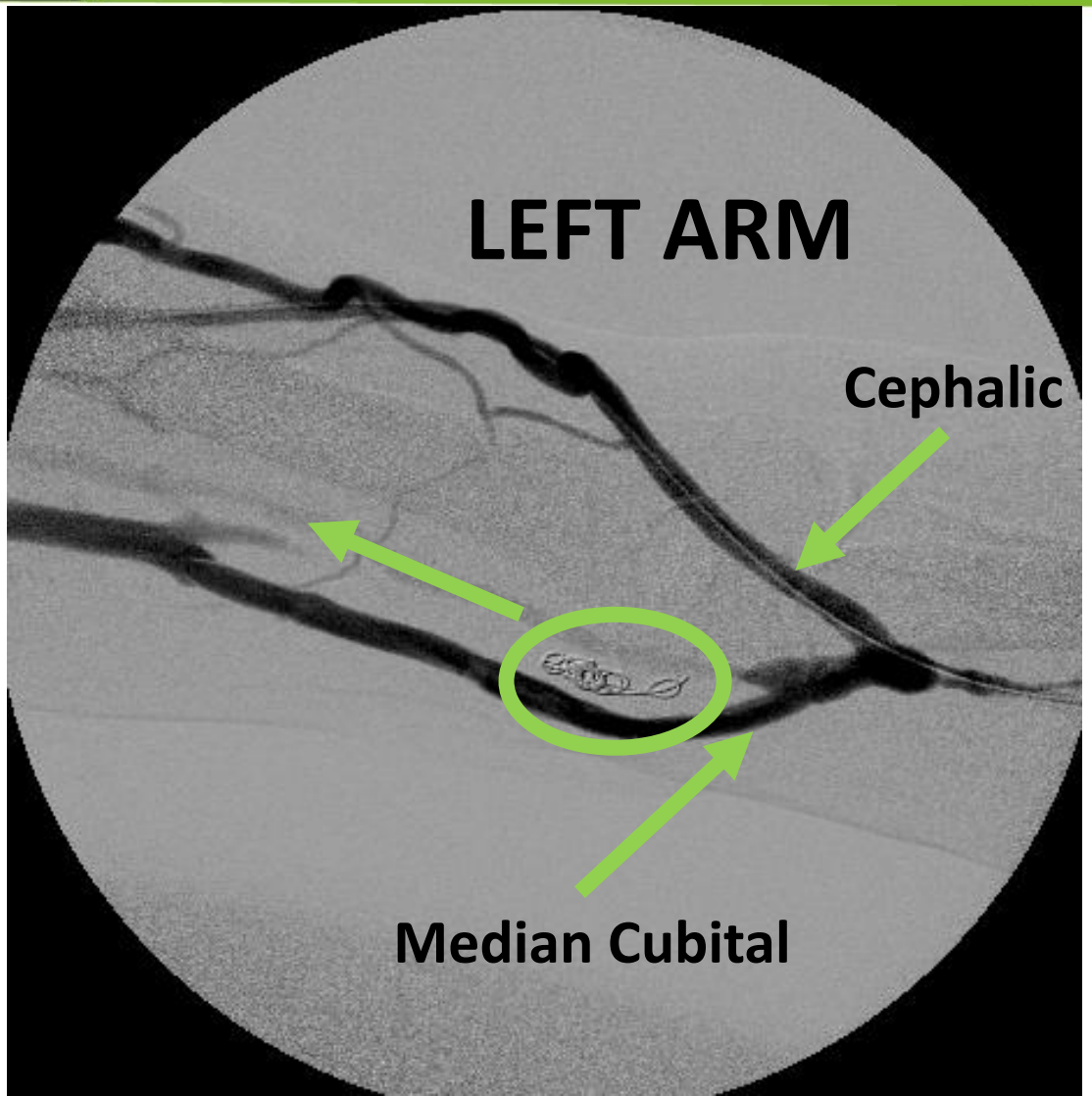


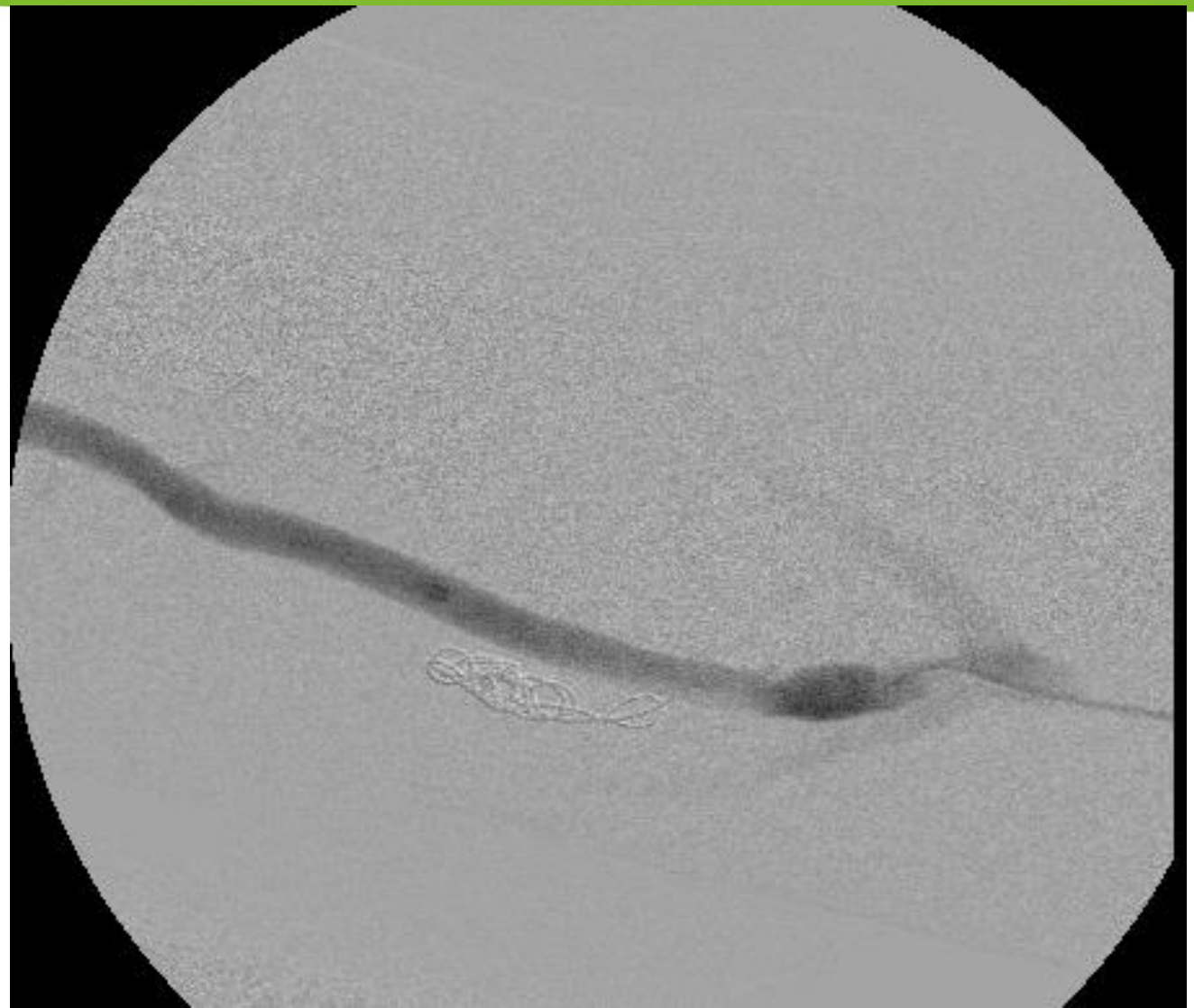
EMBOLIZATION

- Recommend at time of creation
- Embolizing vein with high flow may be an issue
- If embolizing high flow vein consider detachable coil
- TIP: Veins are capacitance vessels so be sure to up size (ie 7-10 mm)



- 69 year old male
- ESRD
- RIJ Permcath
- Vein mapping shows cephalic to be adequate at forearm, small in upper arm; basilic ~2mm
- No AICD/pacemaker
- Endo av fistula created without issue – ulnar artery to ulnar vein – avf with nice thrill, but veins too small to be accessed


LEFT ARM
Cephalic
Median Cubital



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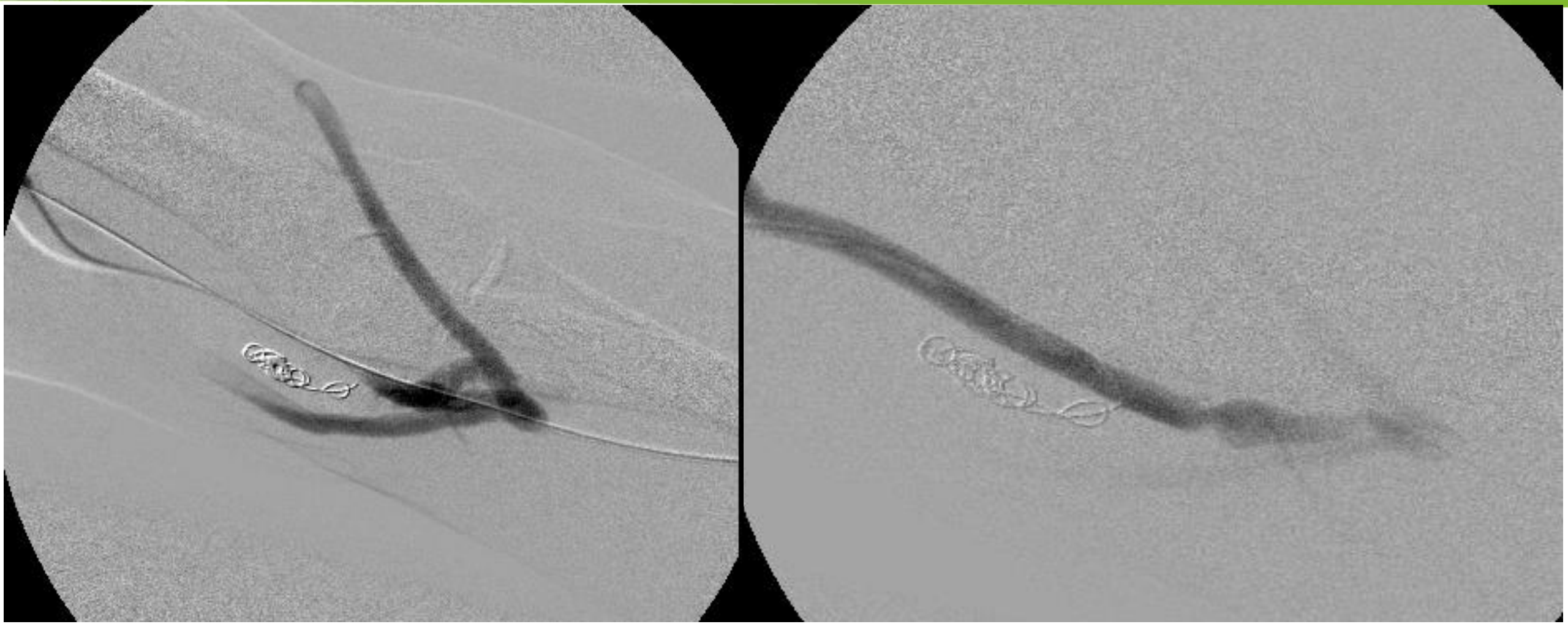

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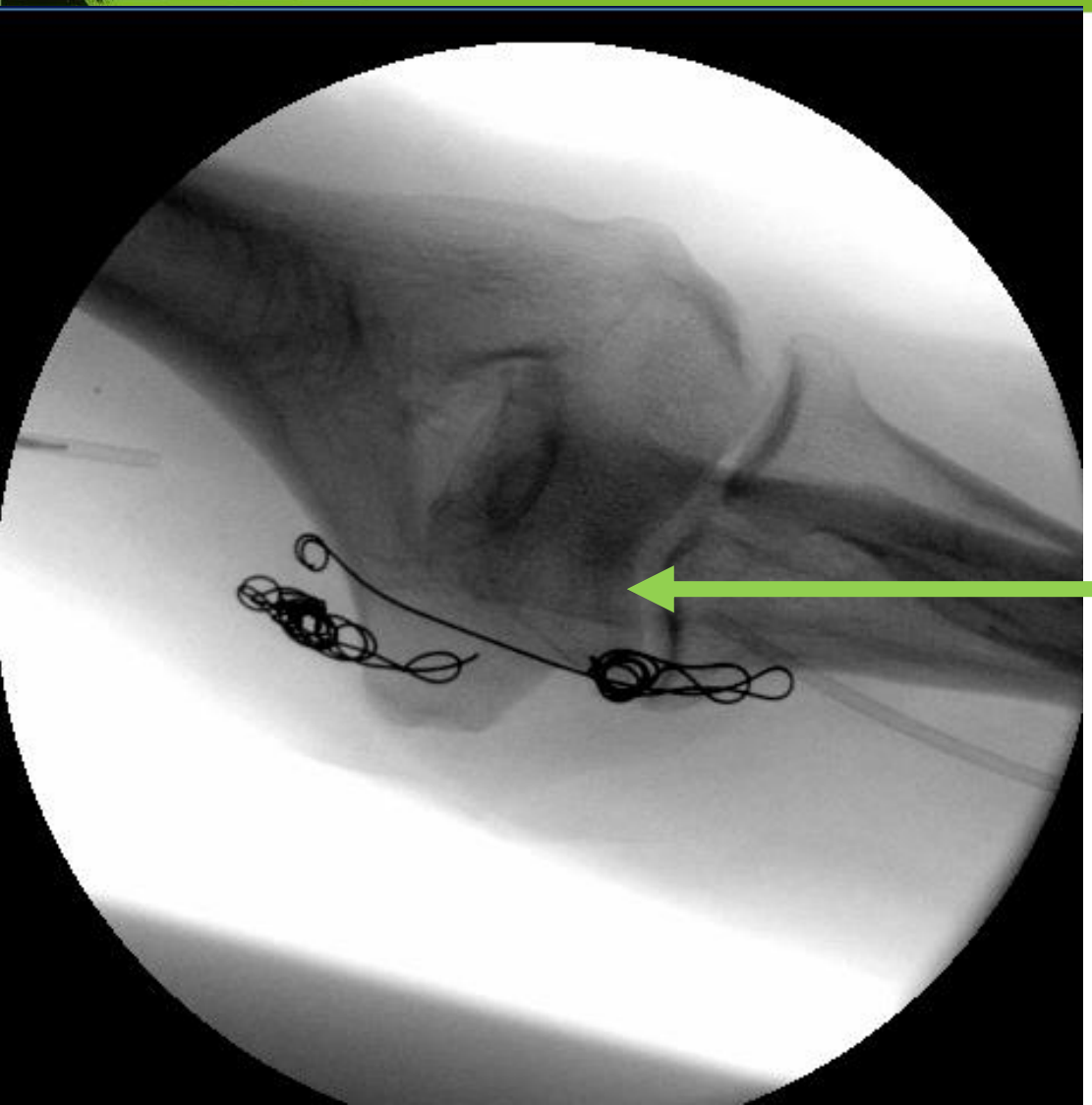

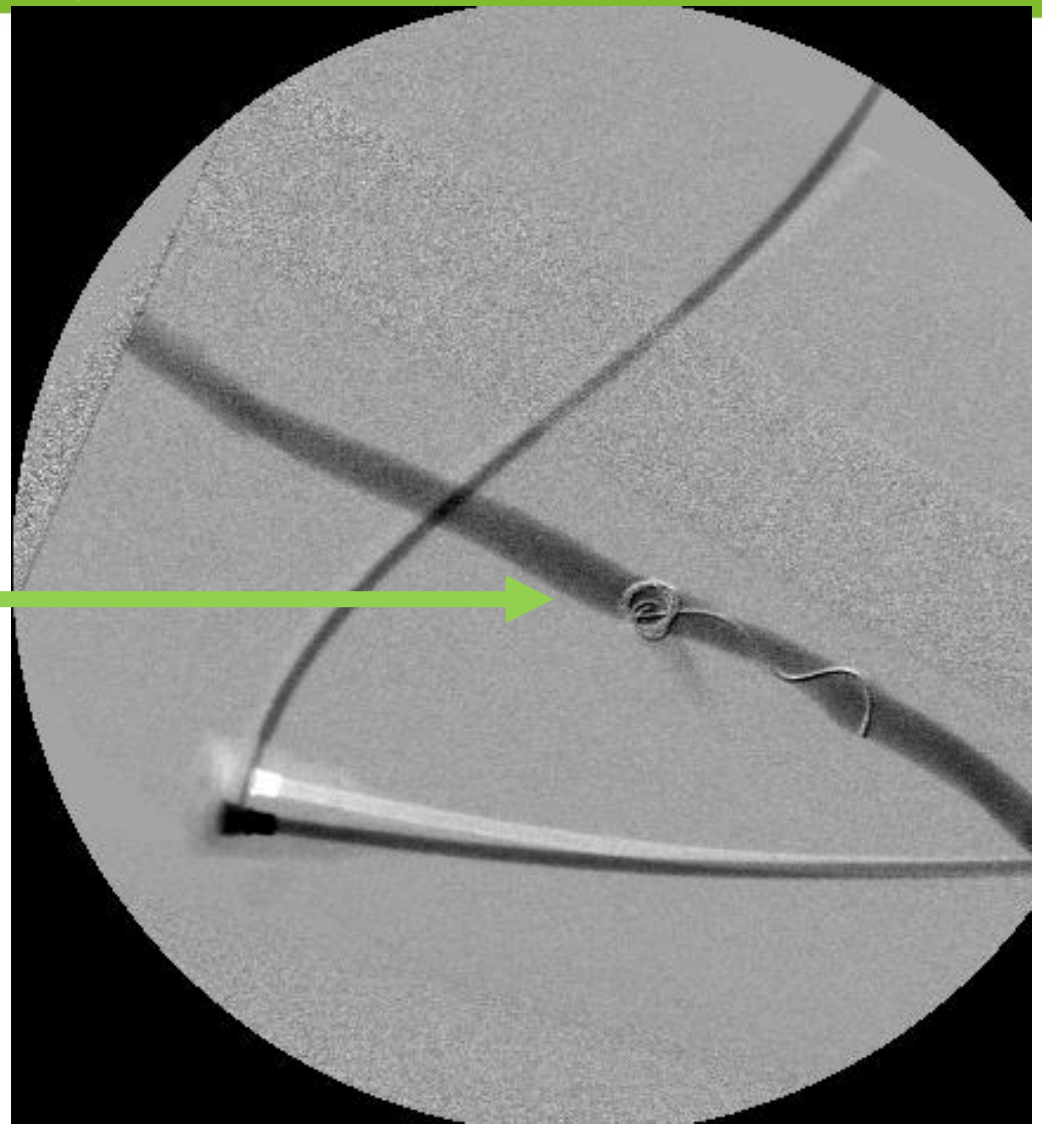

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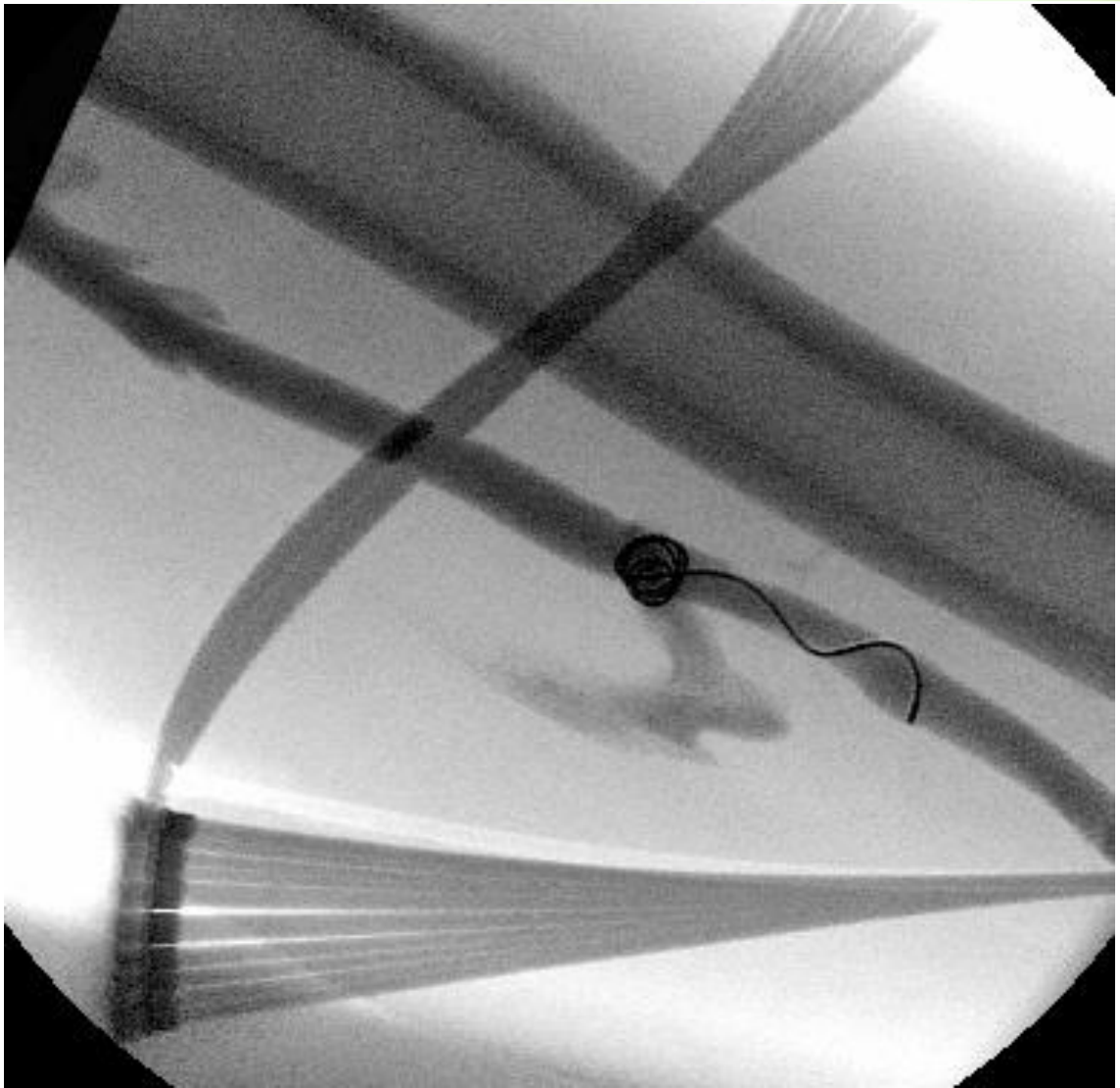

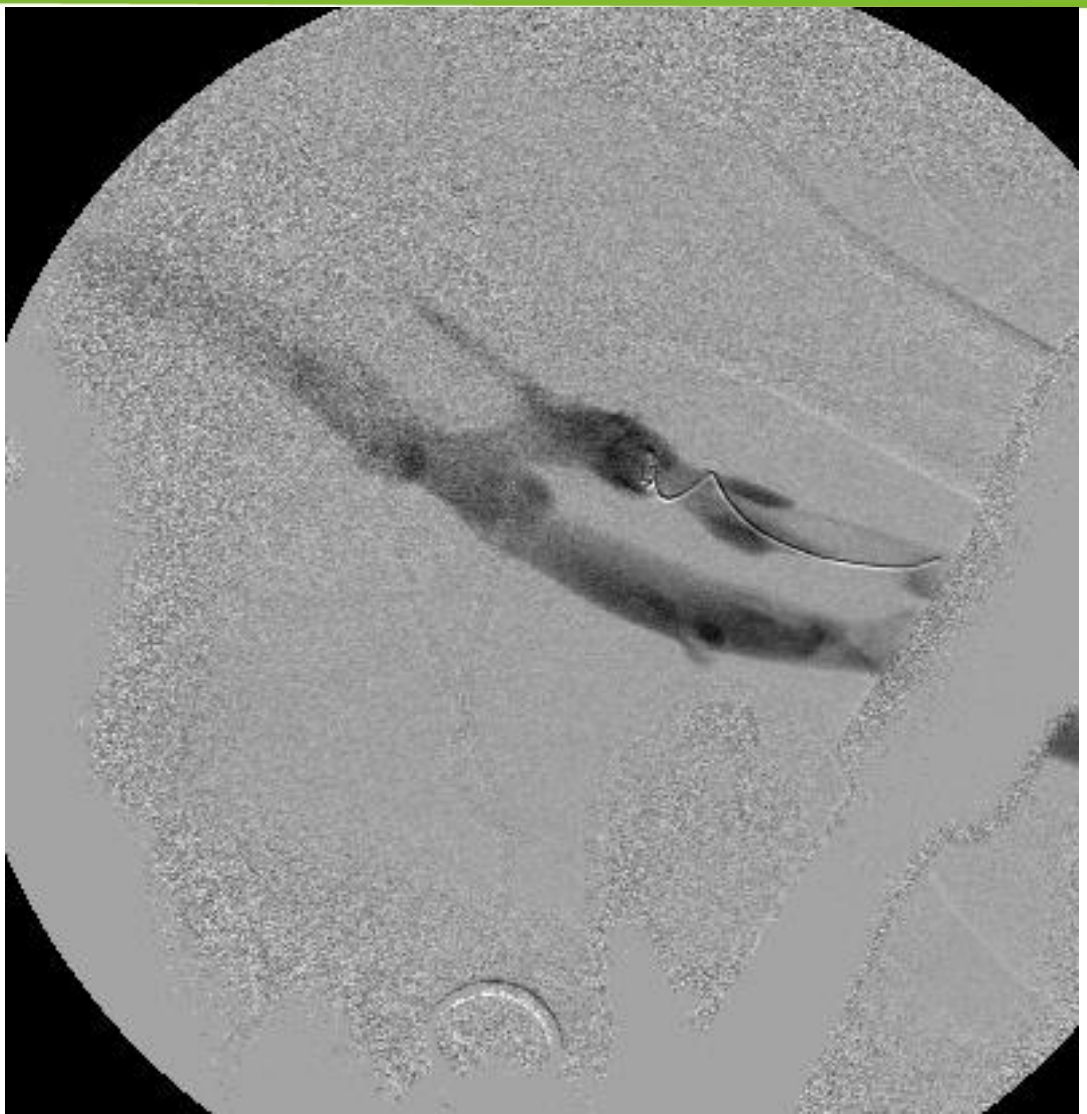

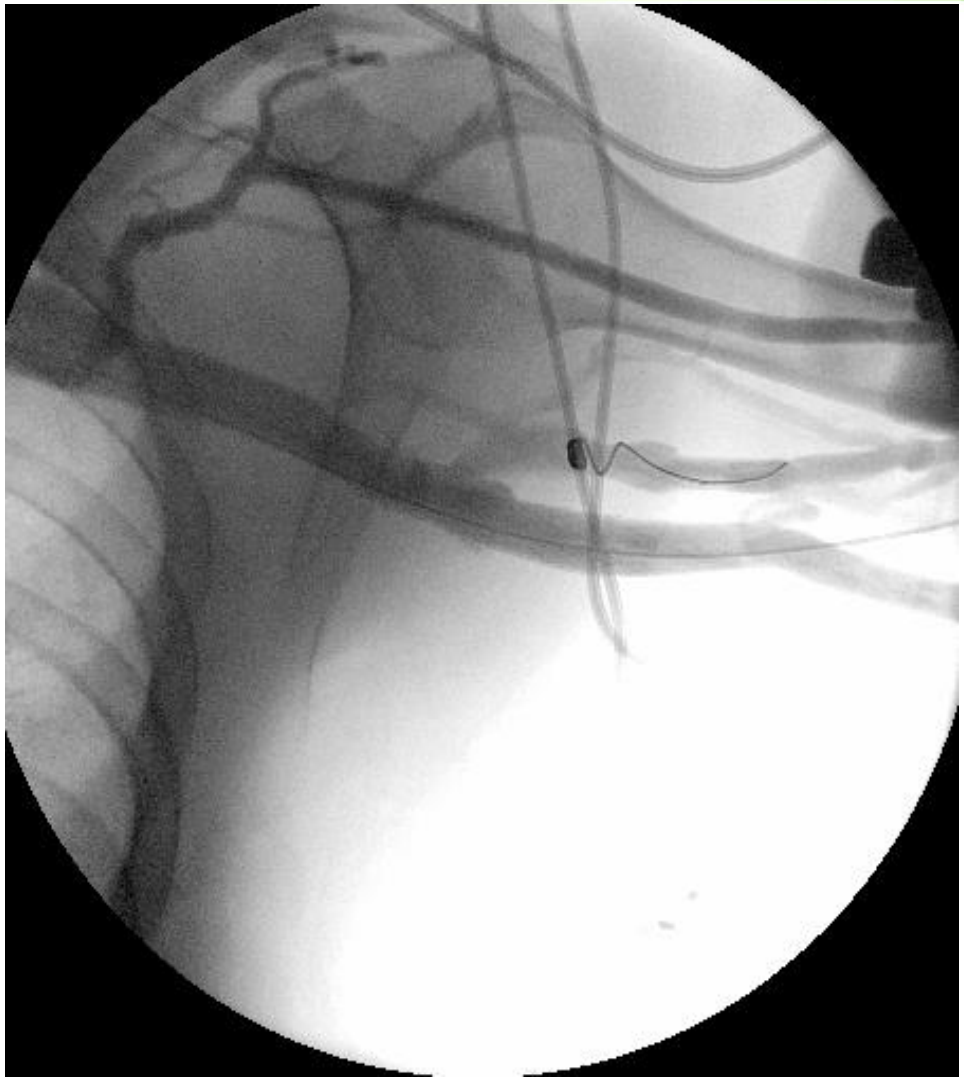

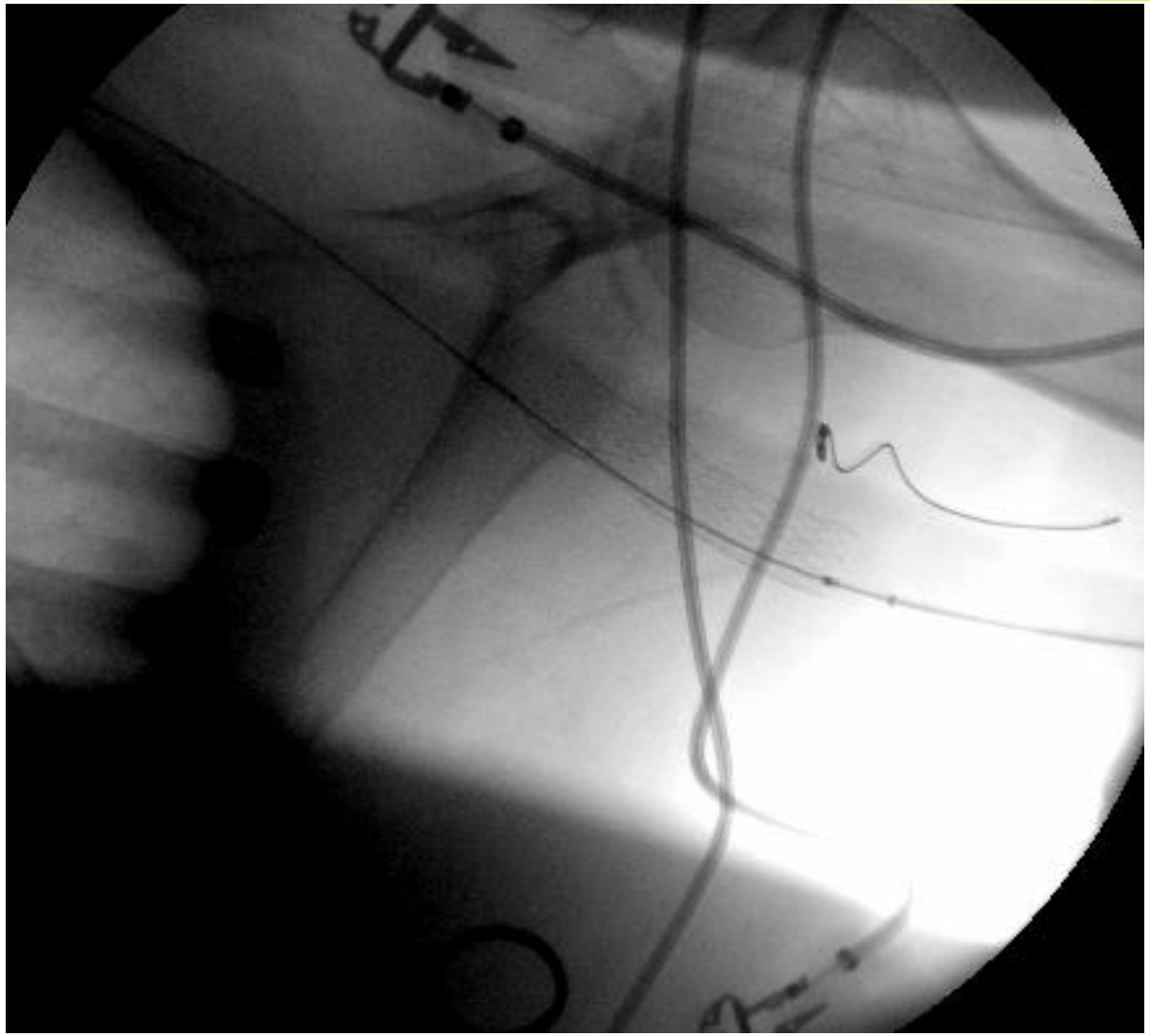

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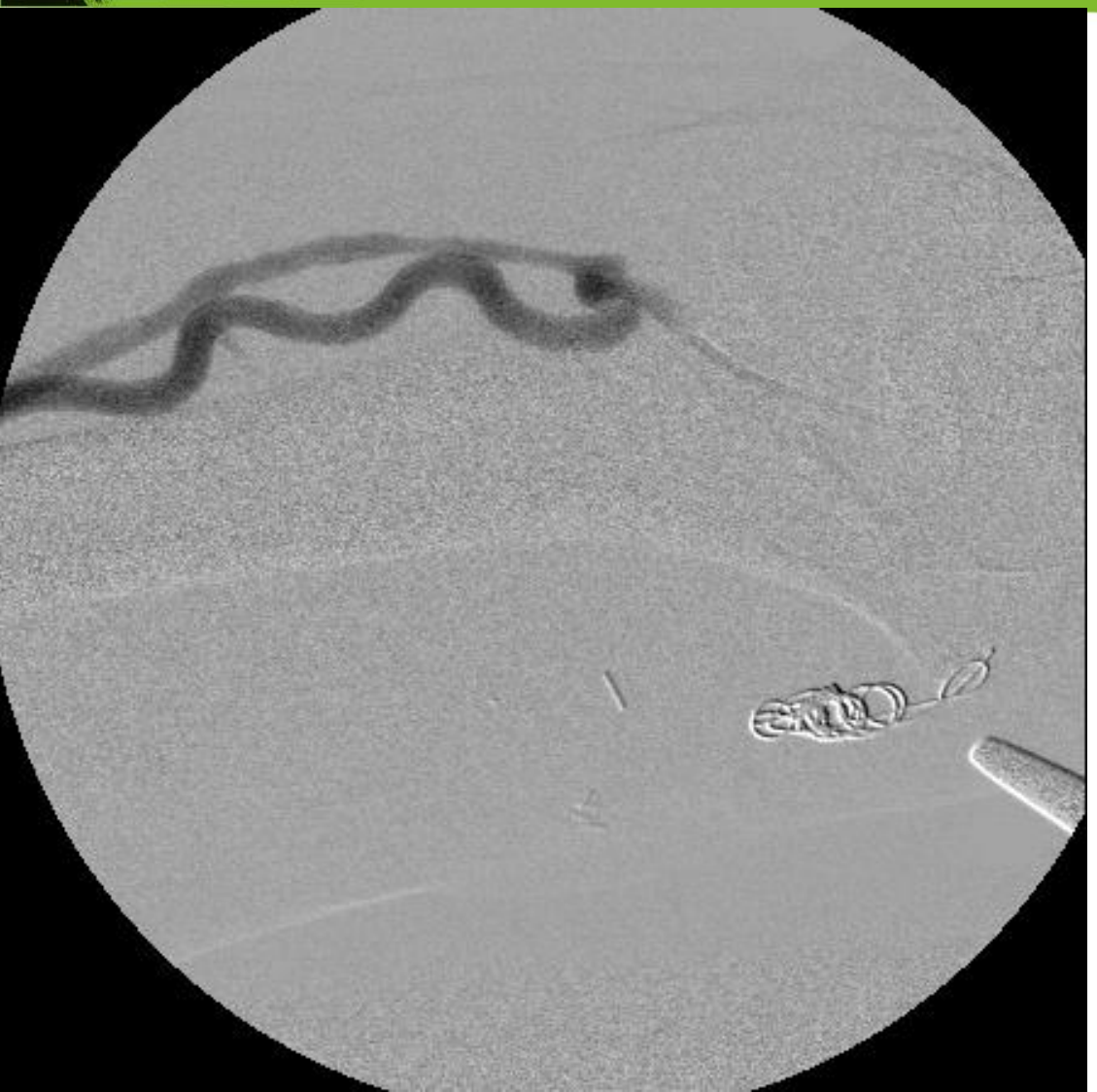
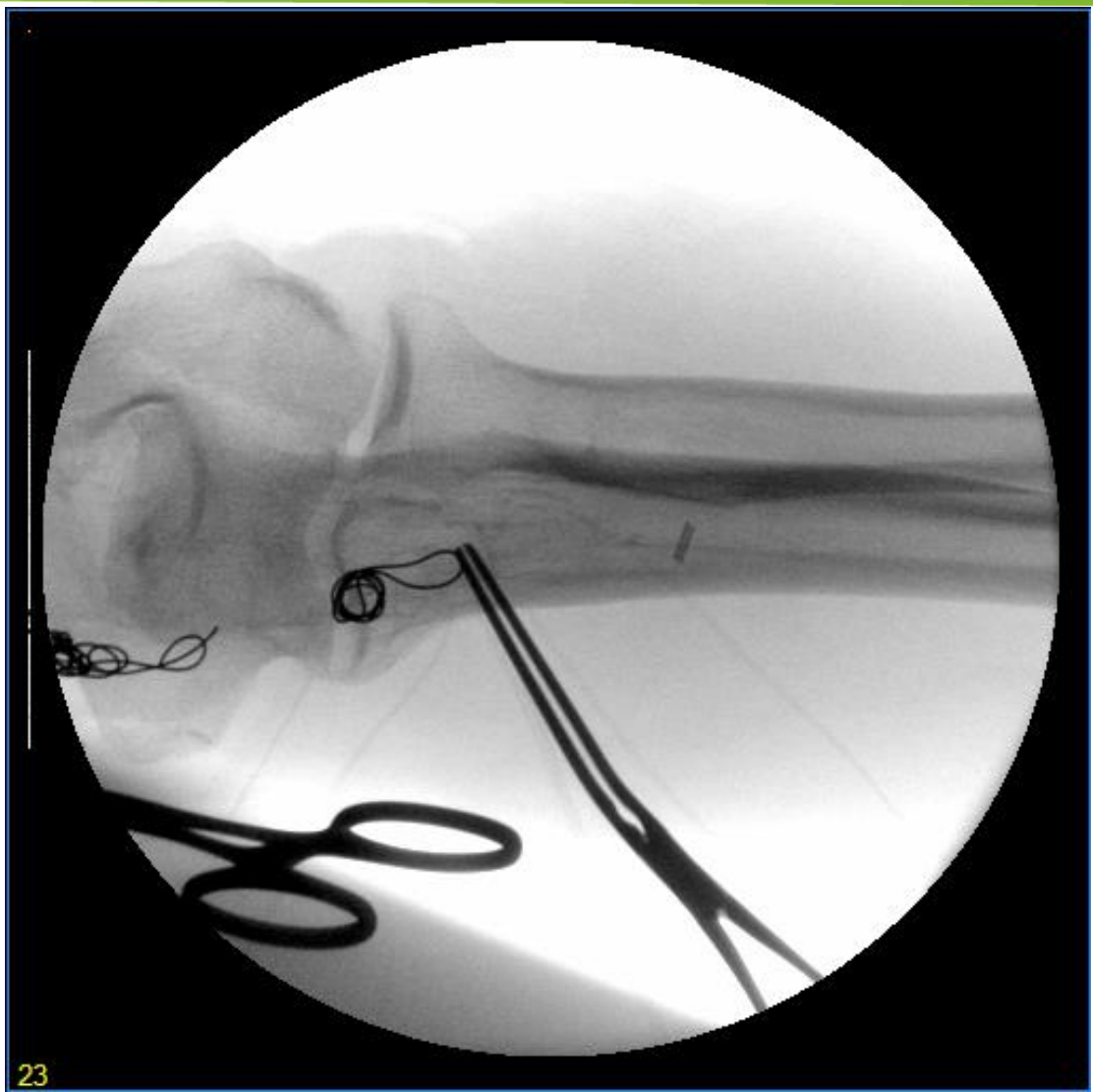
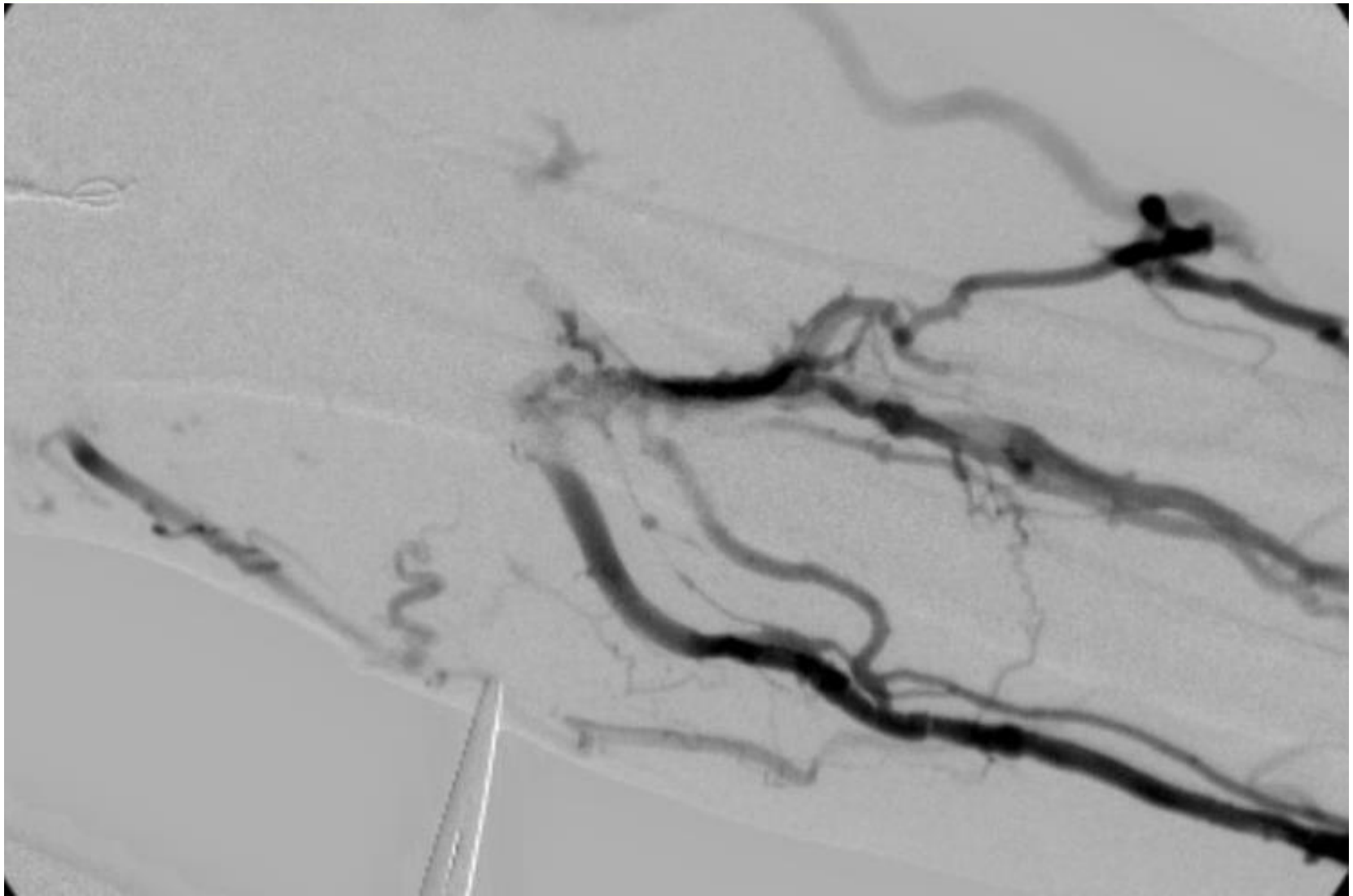
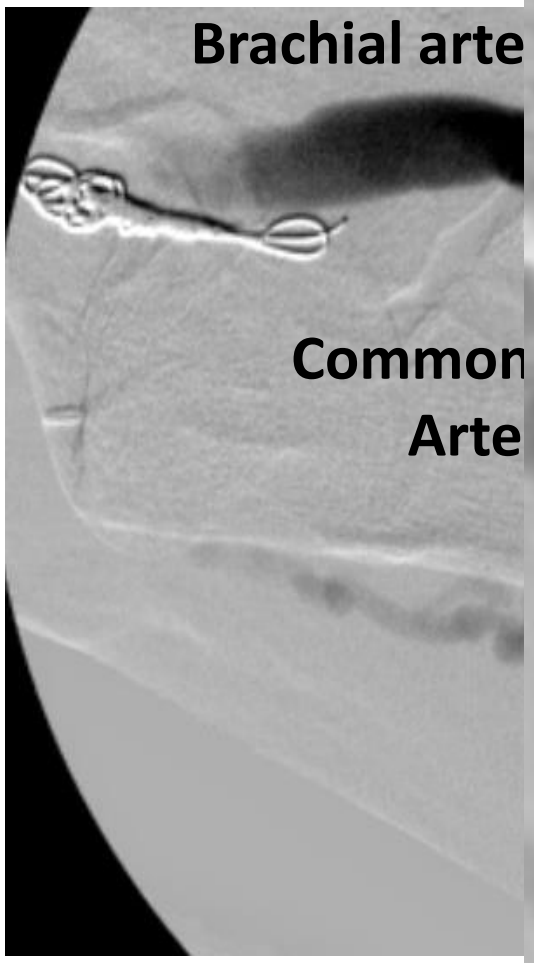


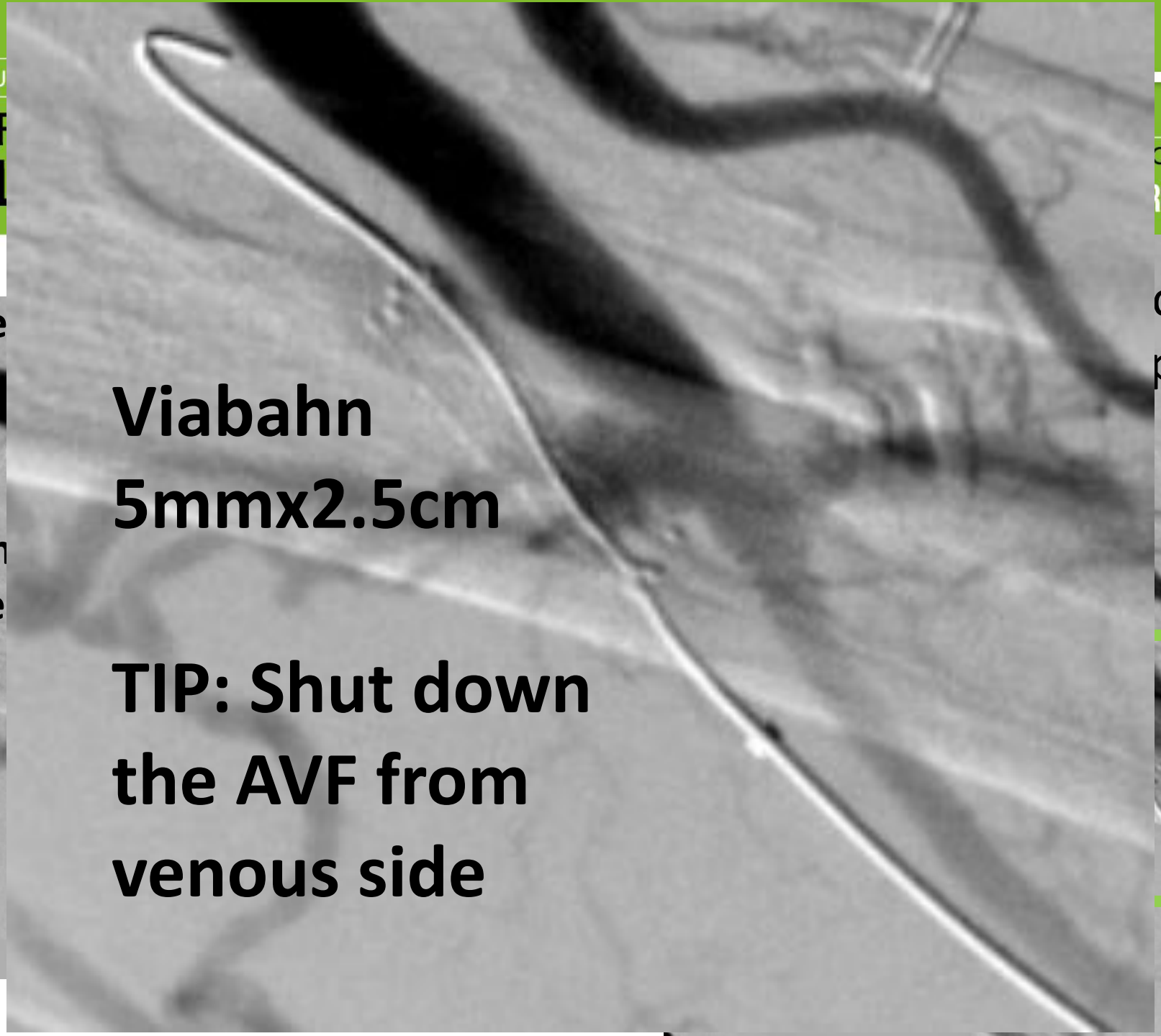


SWELLING

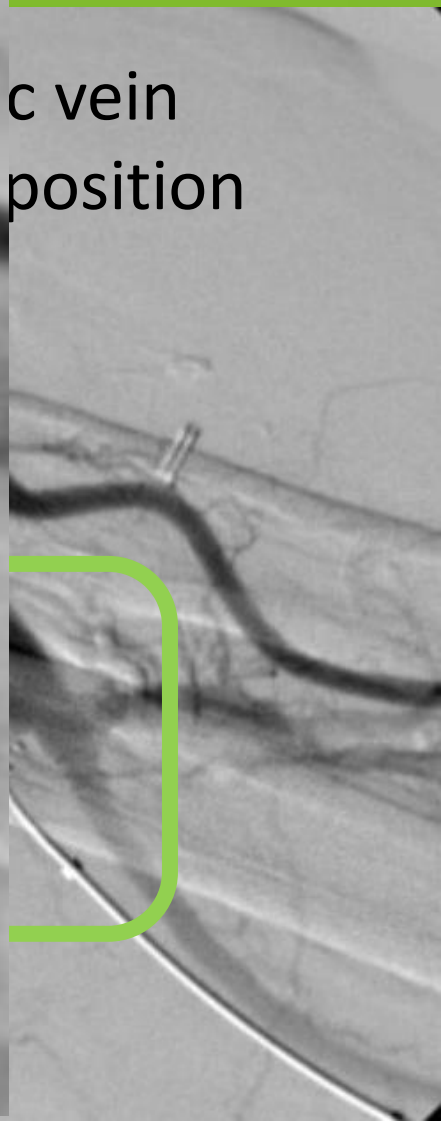
- Can you shut it down?
- If so, how?
- How to approach it?



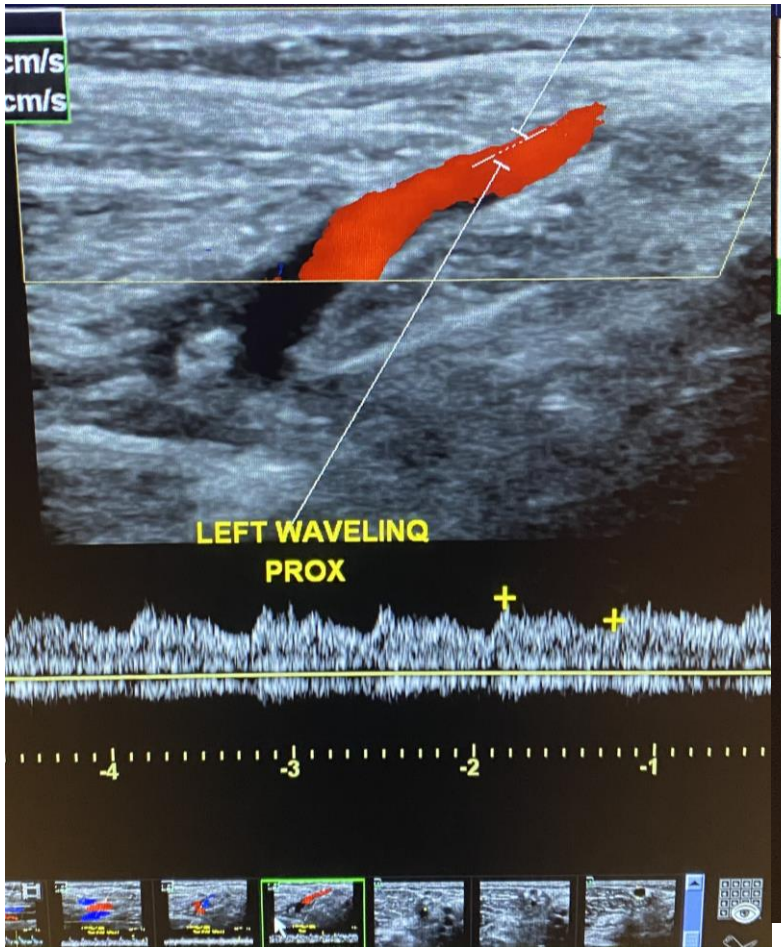


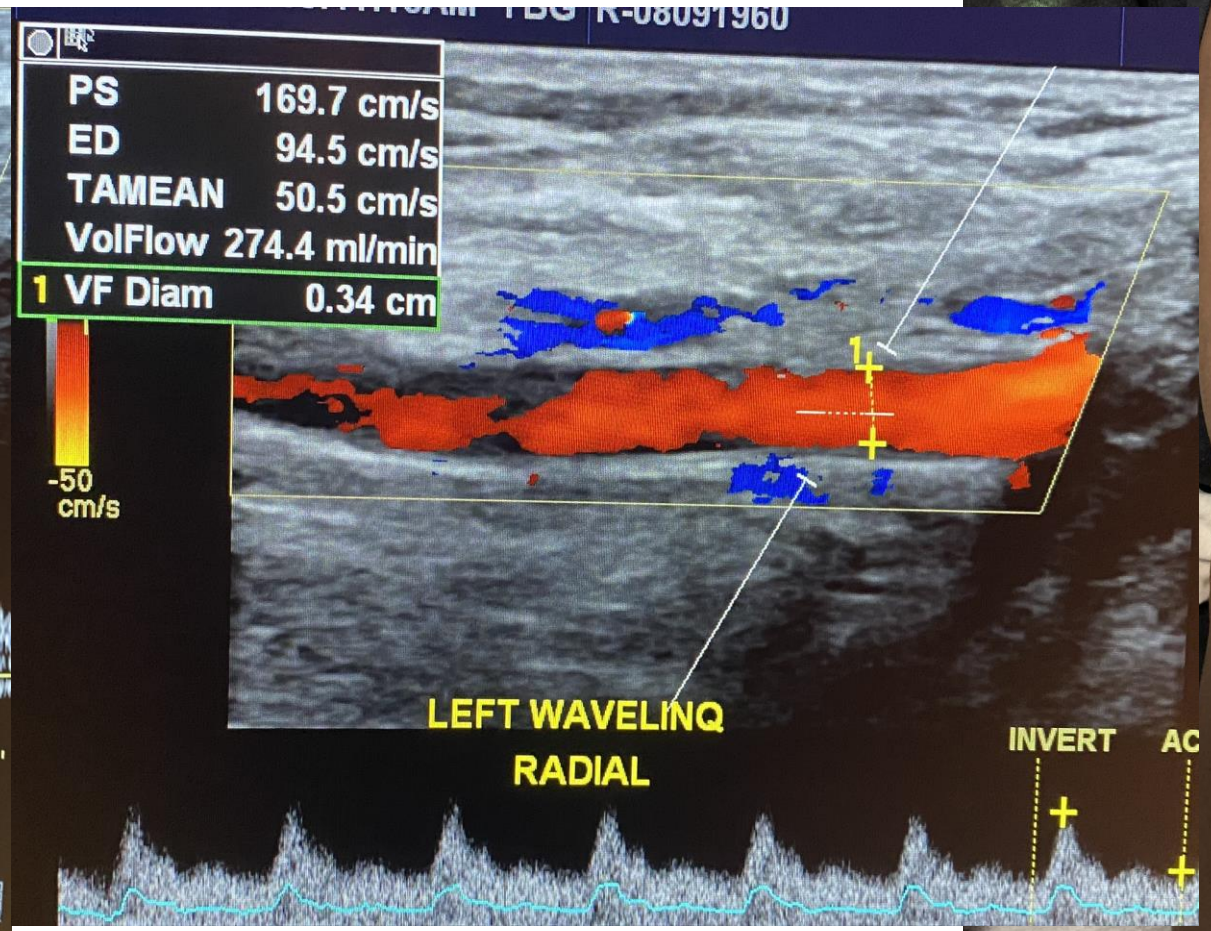


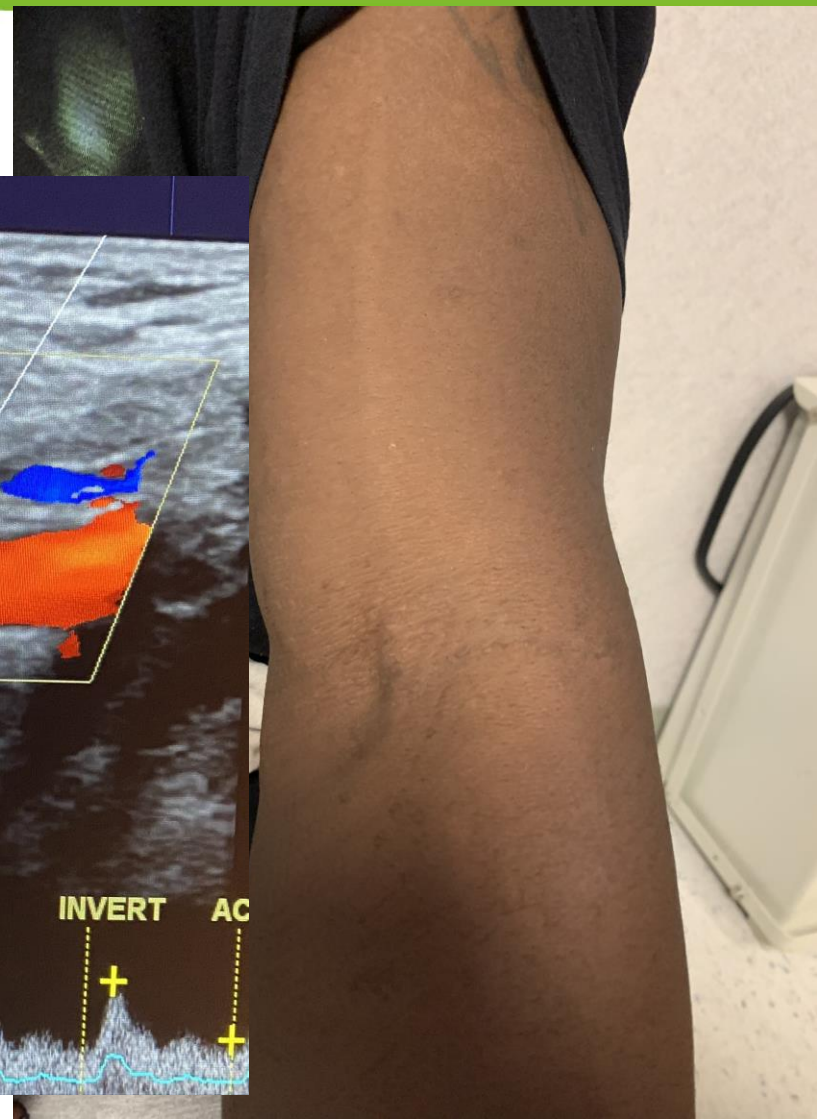
c vein
position



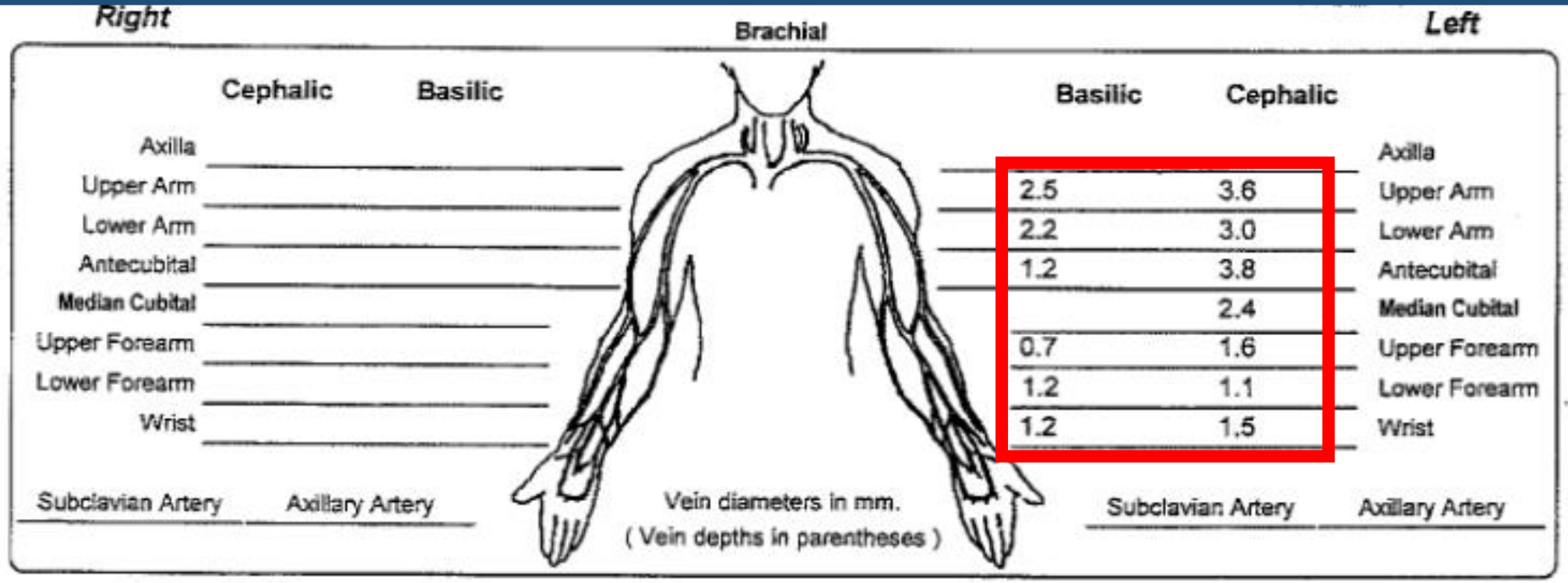
Non-Maturation – Difficulty with Cannulation







EXAMPLE - POST OPERATIVE FOLLOW UP - weak thrill



Interpretation

A non-invasive duplex doppler color flow ultrasound vein mapping of the left upper extremity was performed. The study is of good technical quality.

The left subclavian and axillary veins are patent by color fill.

Chronic wall changes were visualized in the cephalic and basilic veins.

The dominate left brachial vein at the antecubital fossa measures 2.7mm and the brachial artery at the antecubital fossa measures 4.5mm.

Access Details

Op. Date 08/27/2019

Summary Left forearm fistula with wavelinq from radial

Surgeon Stephen E. Hohmann, MD

Results

	Peak Systolic Velocity	Systolic Velocity Ratio	Flow Volume	Stenosis
Inflow	166.0	N/A	N/A	N/A
Proximal	69.0	0.4		Normal
Mid-graft	31.0	0.4		Normal
Distal	24.0	0.8		Normal
Outflow	35.0	1.5		Minimal

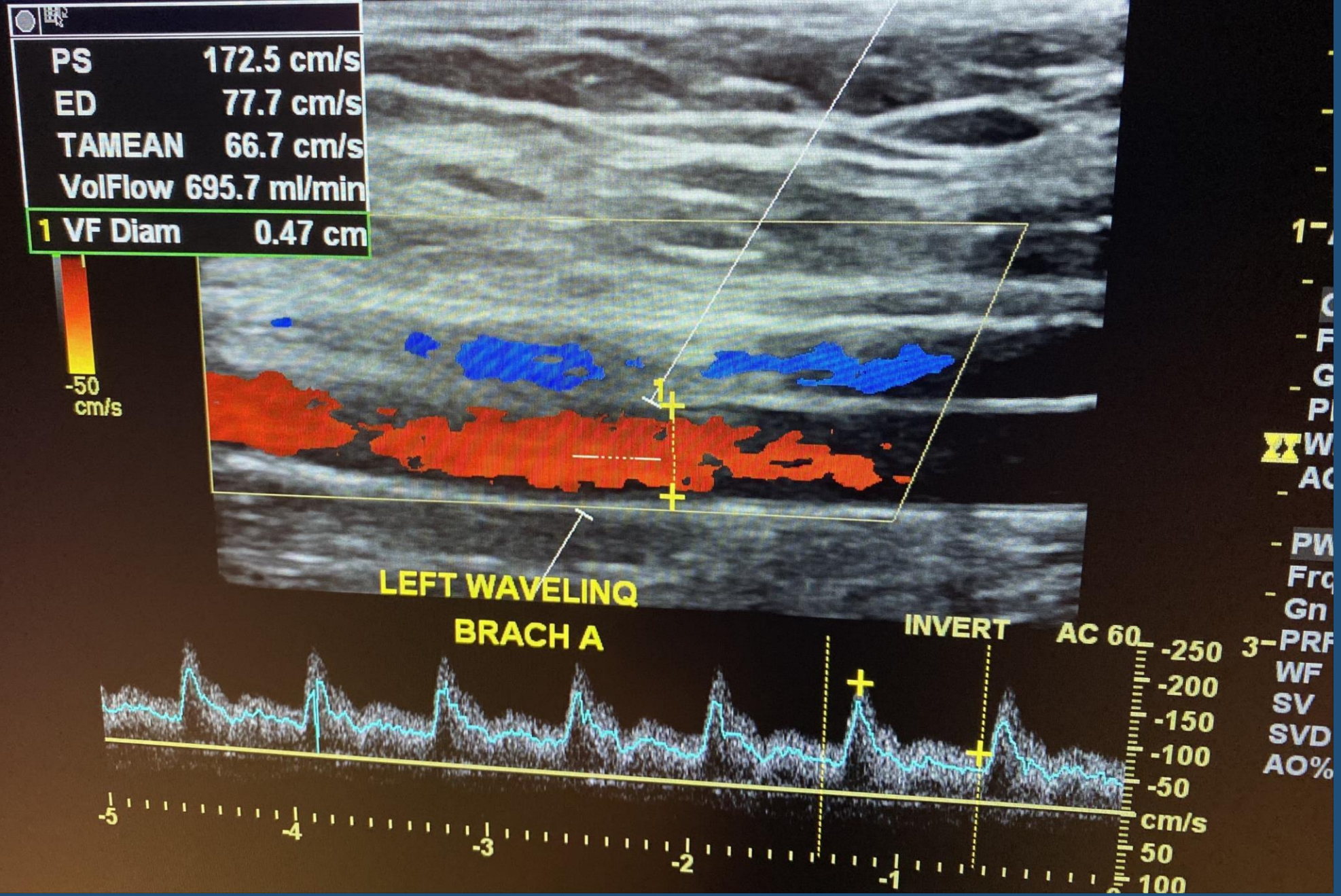
Mean Flow Volume

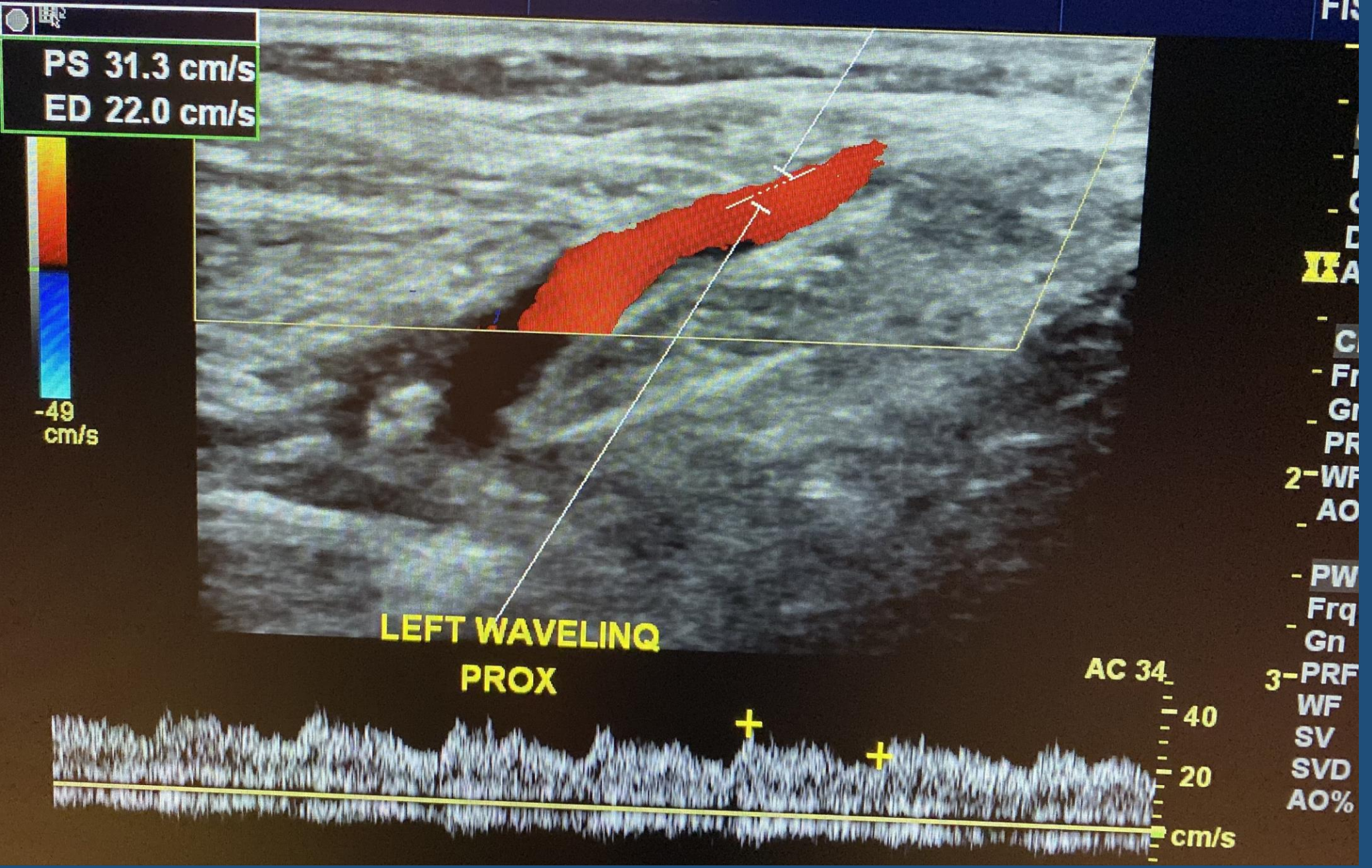
Interpretation

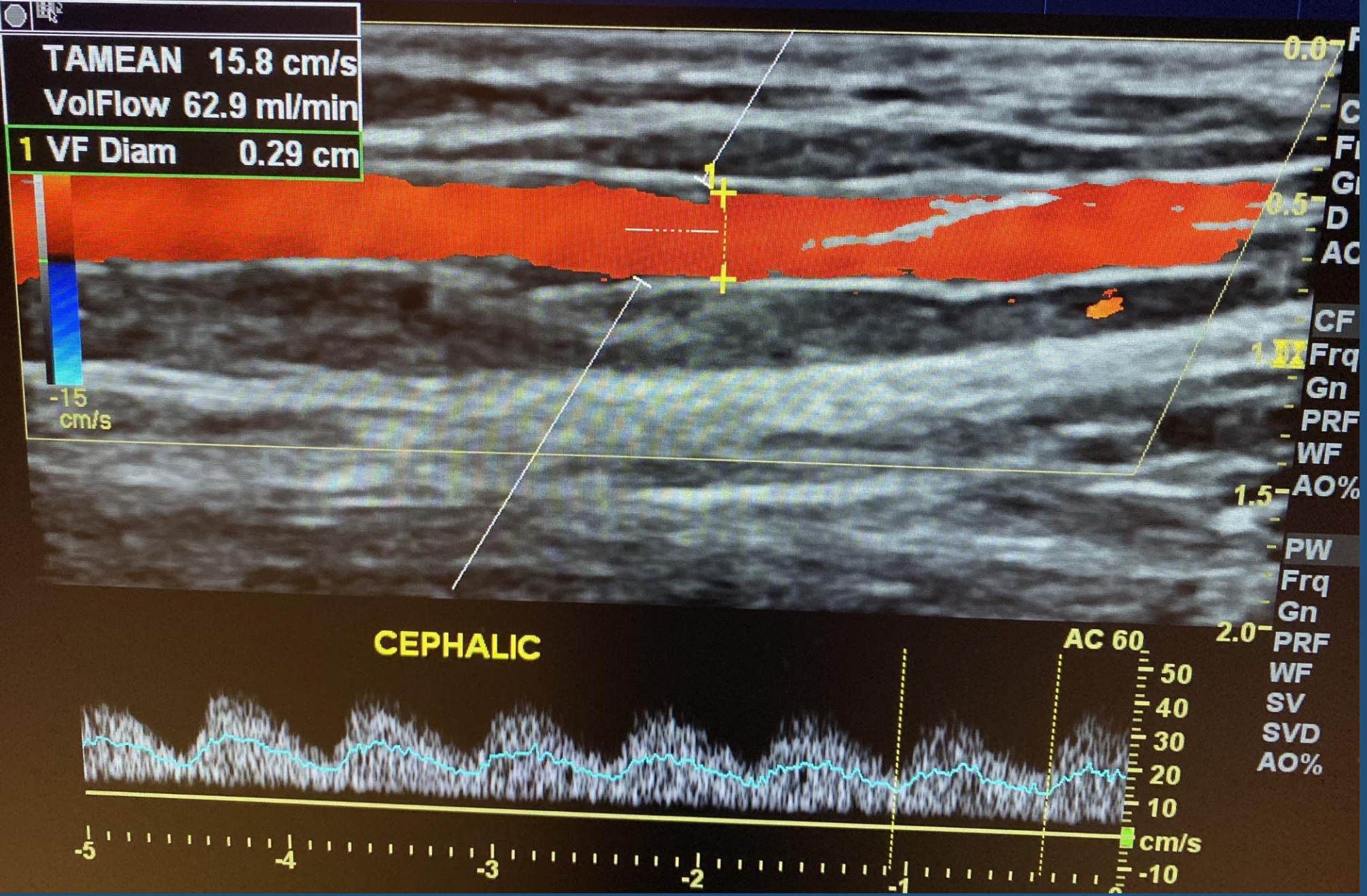
Non-invasive duplex ultrasound with color flow Doppler of the left AV fistula was performed. The exam is of good technical quality.

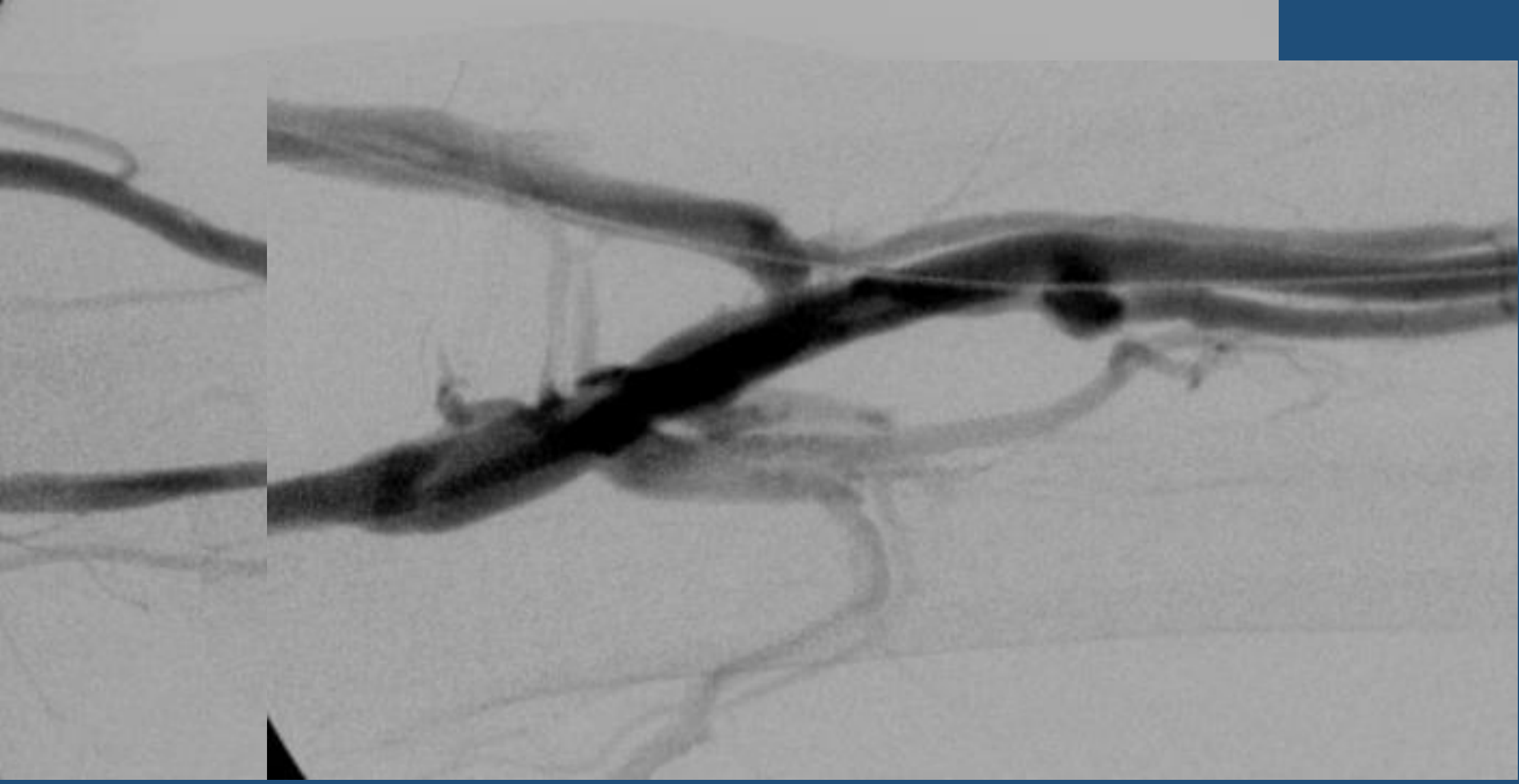
There is a high brachial artery bifurcation in the high brachium. The ulnar artery is small in diameter in the brachium and forearm. Patent left forearm radial WavelinQ AVF. Both brachial veins are patent. Chronic wall thickening in the basilic vein in the brachium and forearm with venous only flow characterstics. Chronic wall thickening in the left cephalic in the forearm below the cephalic branch in the upper forearm. The primary arterial venous flow is in the brachium cephalic and one of the brachium radial veins. Venous only flow characterstics in other brachium radial vein and brachium ulnar veins.
The flow volume in the brachium radial artery , inflow to the fistula, is 695 mL/min and an intraluminal diameter of 4.7mm. The flow volume in the cephalic outflow of the fistula is 274 mL/min with an intraluminal diameter of 3.4 mm.The flow volume in the brachium radial outflow of the fistula is 257 mL/min with an intraluminal diameter of 3.3 mm.

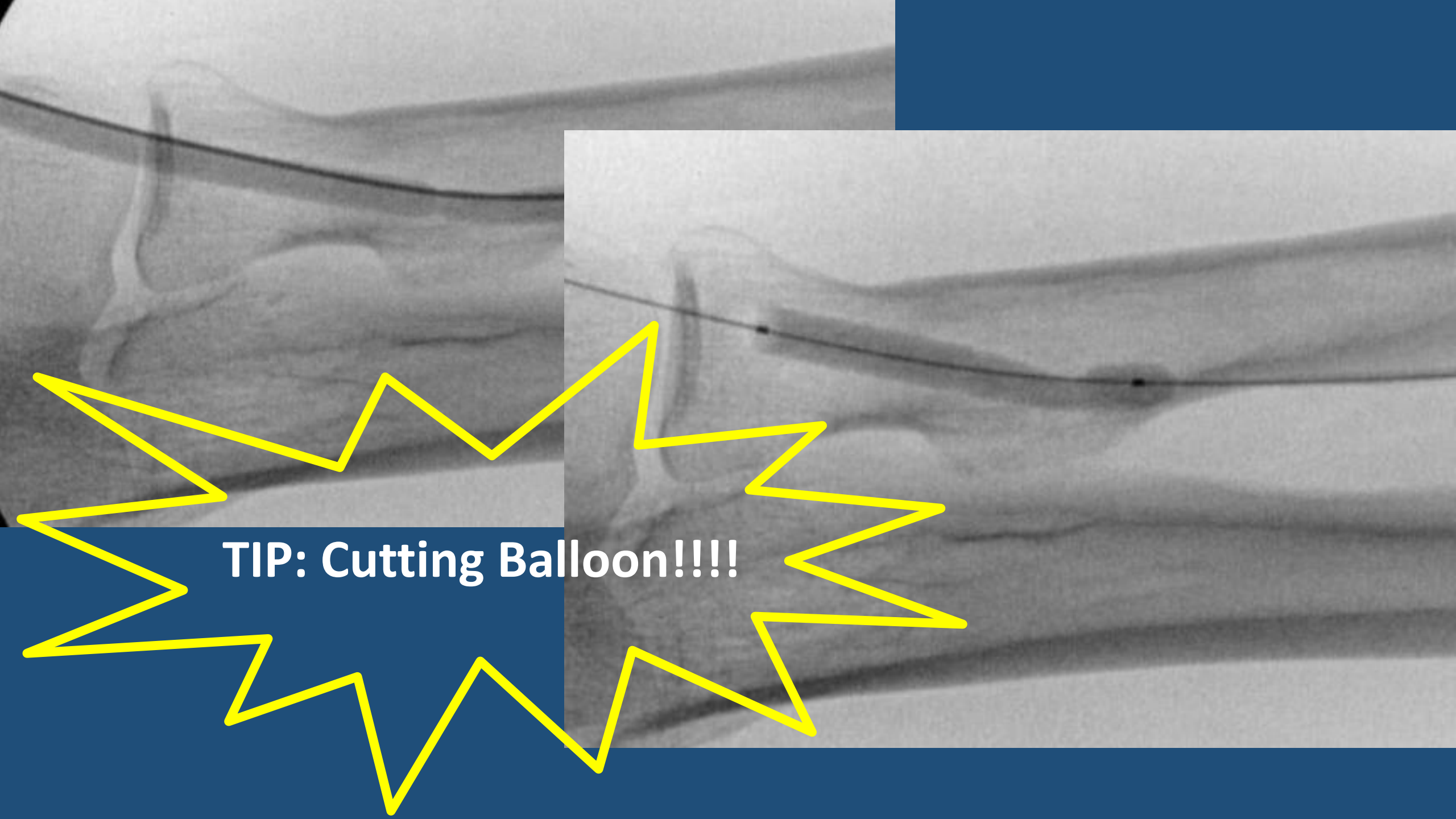
The cephalic measurements are : forearm cephalic branch- 3.7mm, antecubitial 4.6mm, lower brachium 3.4 (4.2 mm deep), mid brachium 3.8 (5.5 mm deep), upper brachium 4.0 (5.7 mm deep) and axilla 4.3mm.

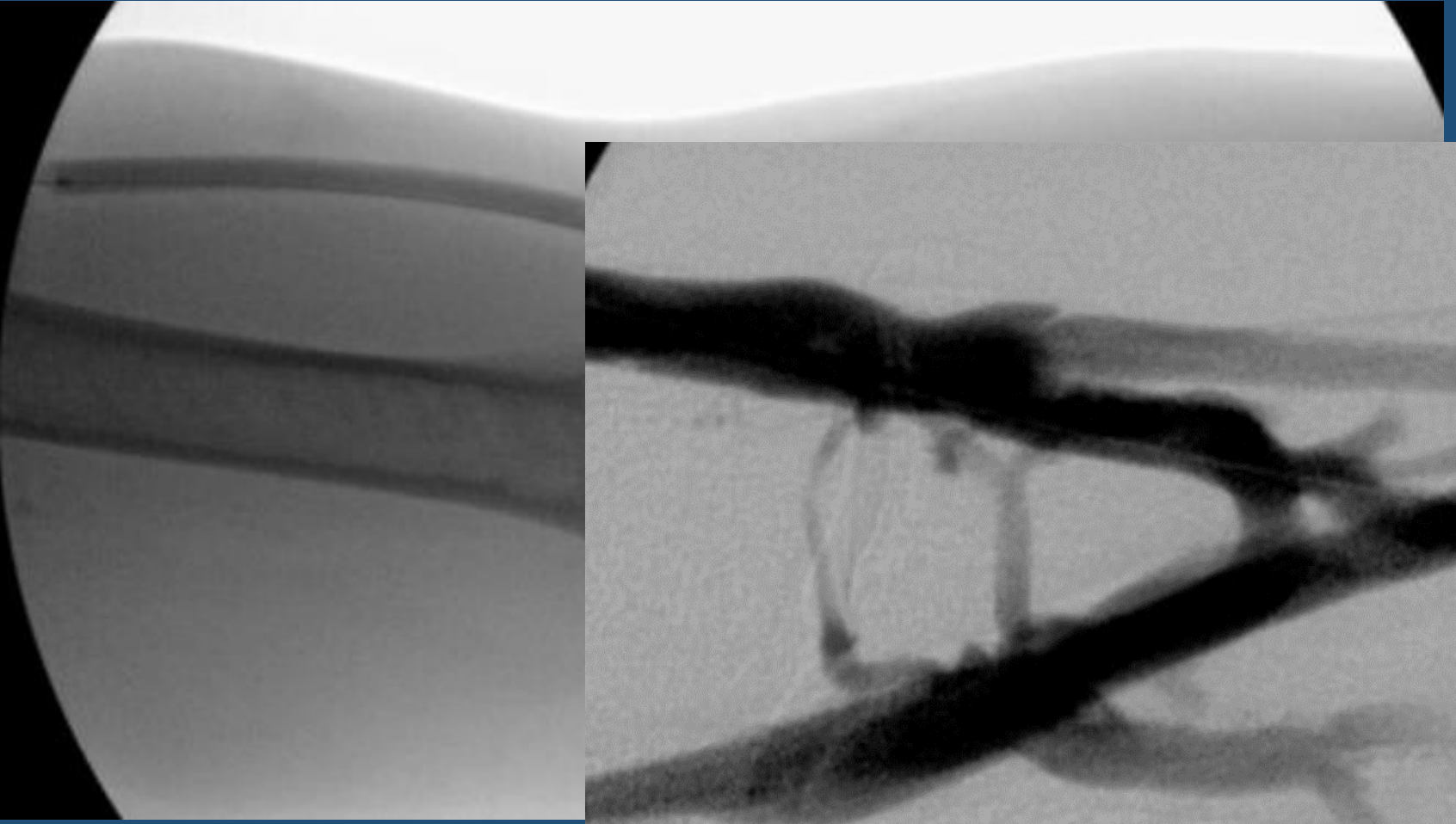

PS 172.5 cm/s
ED 77.7 cm/s
TAMEAN 66.7 cm/s
VolFlow 695.7 ml/min
1 VF Diam 0.47 cm
-50
cm/s
LEFT WAVELINQ
BRACH A
INVERT
AC 60
-250
-200
-150
-100
-50
cm/s
50
100
-5
-4
-3
-2
-1
PW
Gn
PRF
WF
SV
SVD
AO%

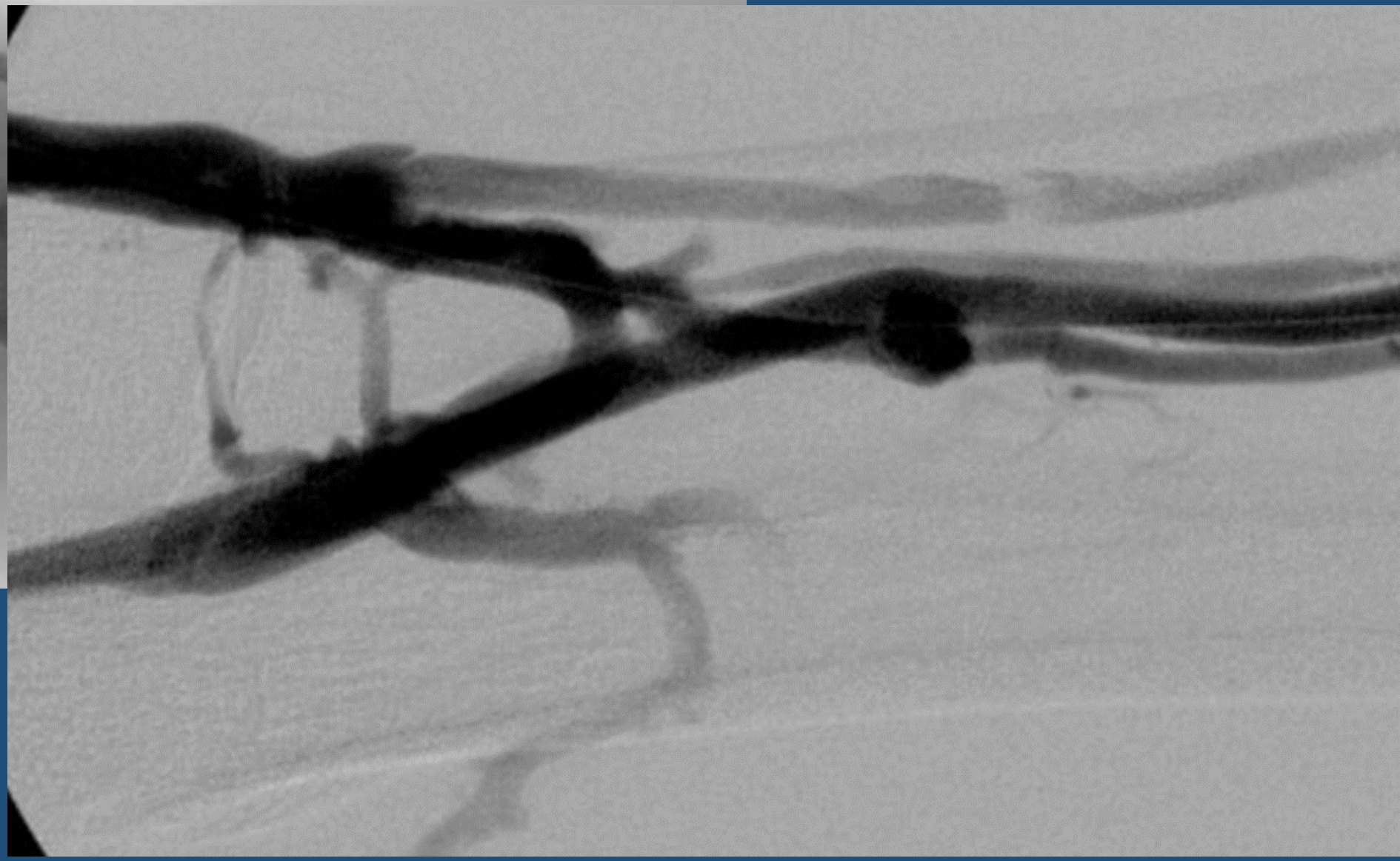

PS 31.3 cm/s
ED 22.0 cm/s
-49
cm/s
LEFT WAVELINQ
PROX
AC 34
40
20
cm/s
PW
Frq
Gn
PRF
WF
SV
SVD
AO%

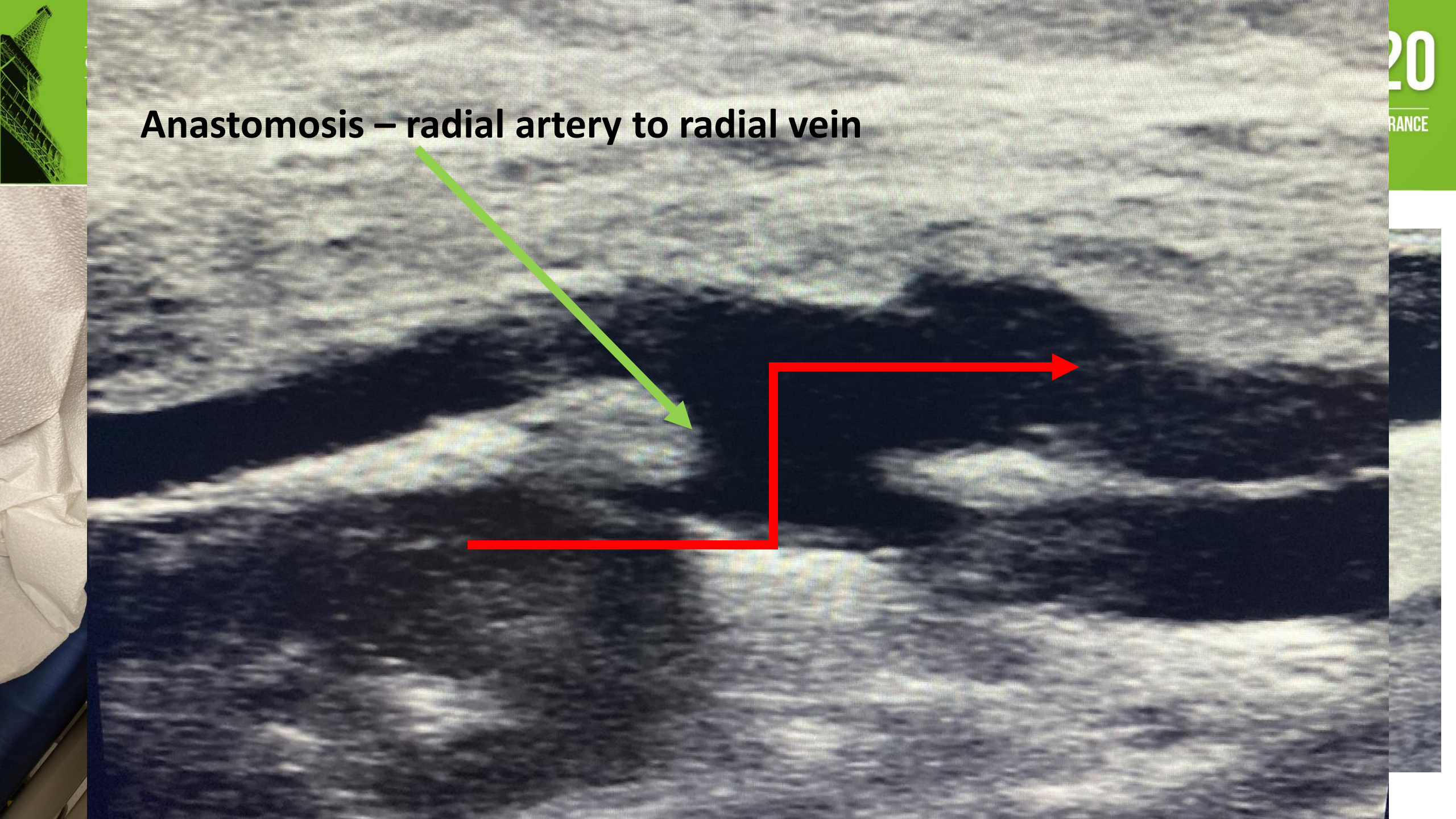

TAMEAN 15.8 cm/s
VolFlow 62.9 ml/min
1 VF Diam 0.29 cm
-15
cm/s
0.0
0.5
1.5
2.0
CF
Frq
Gn
PRF
WF
AO%
PW
Frq
Gn
PRF
WF
SV
SVD
AO%
CEPHALIC
AC 60
50
40
30
20
10
cm/s
-10
-5
-4
-3
-2
-1



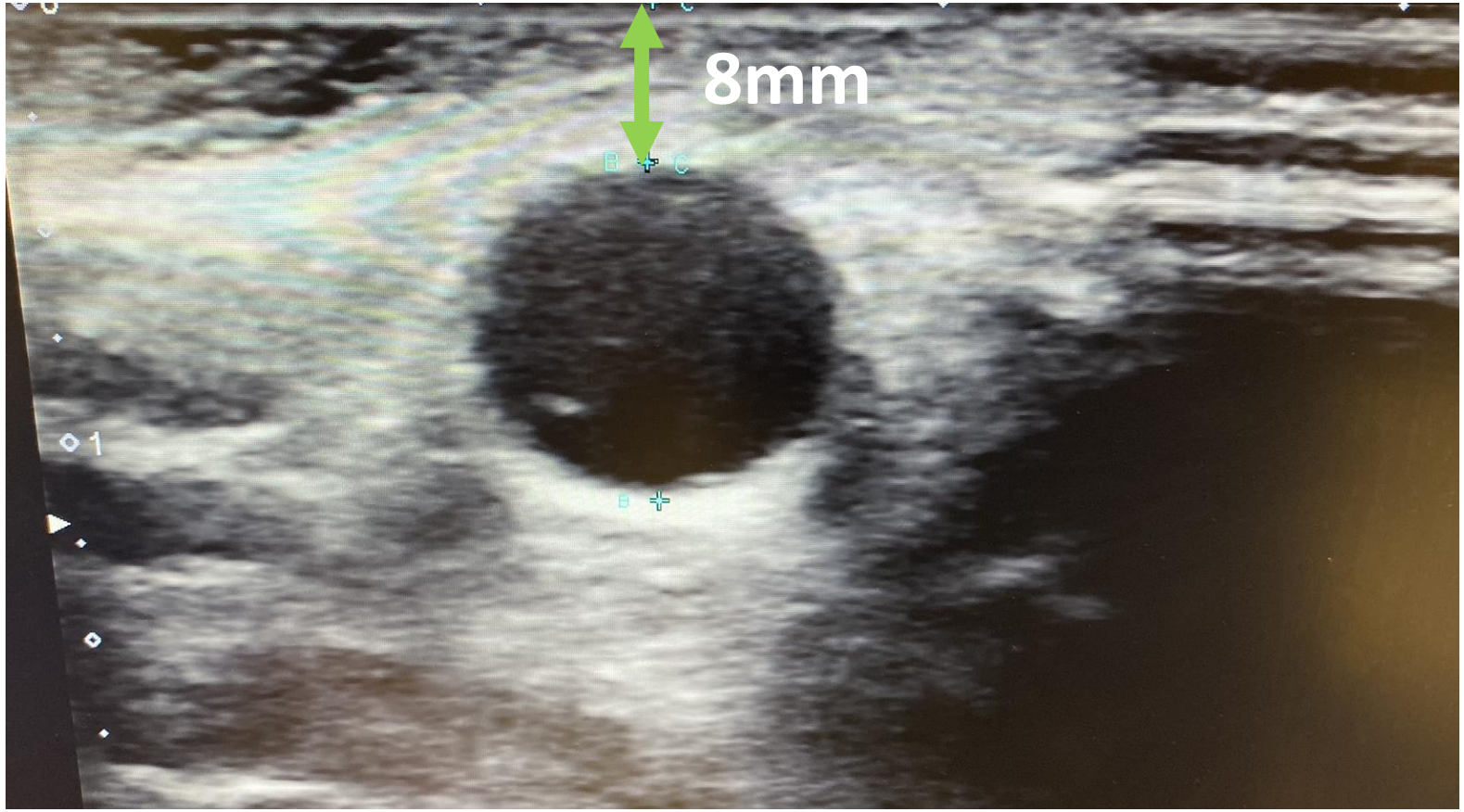

TIP: Cutting Balloon!!!!

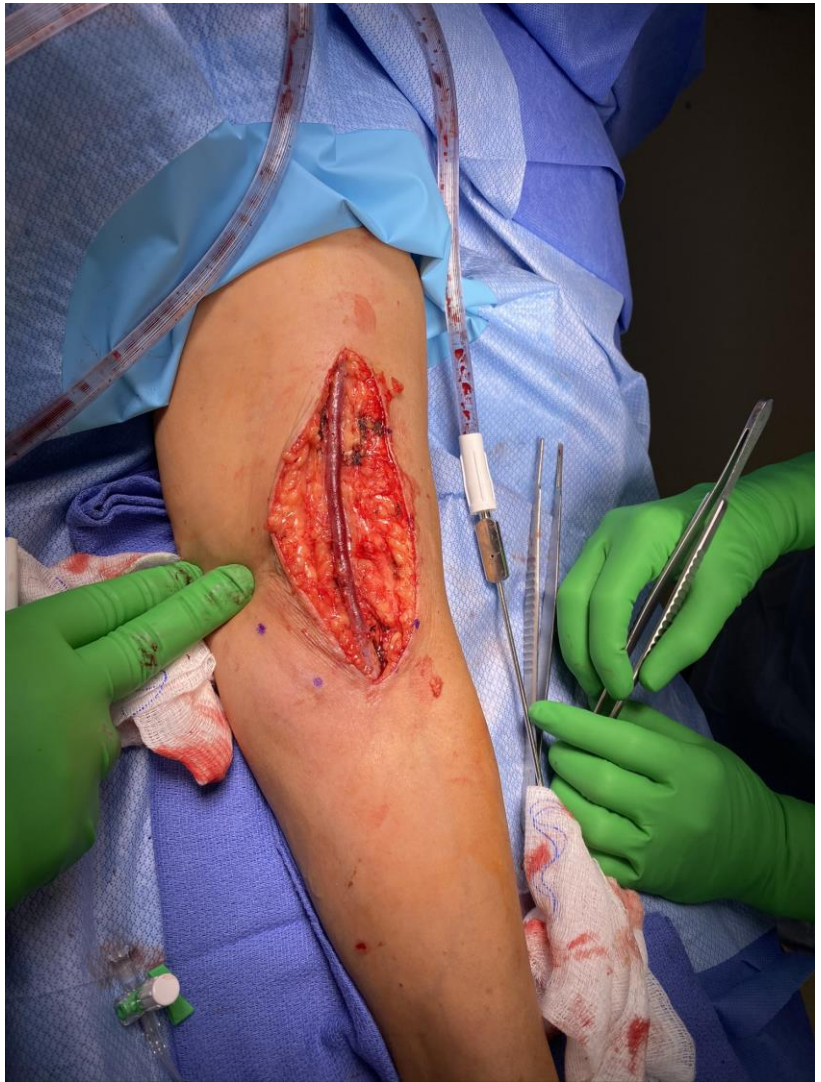


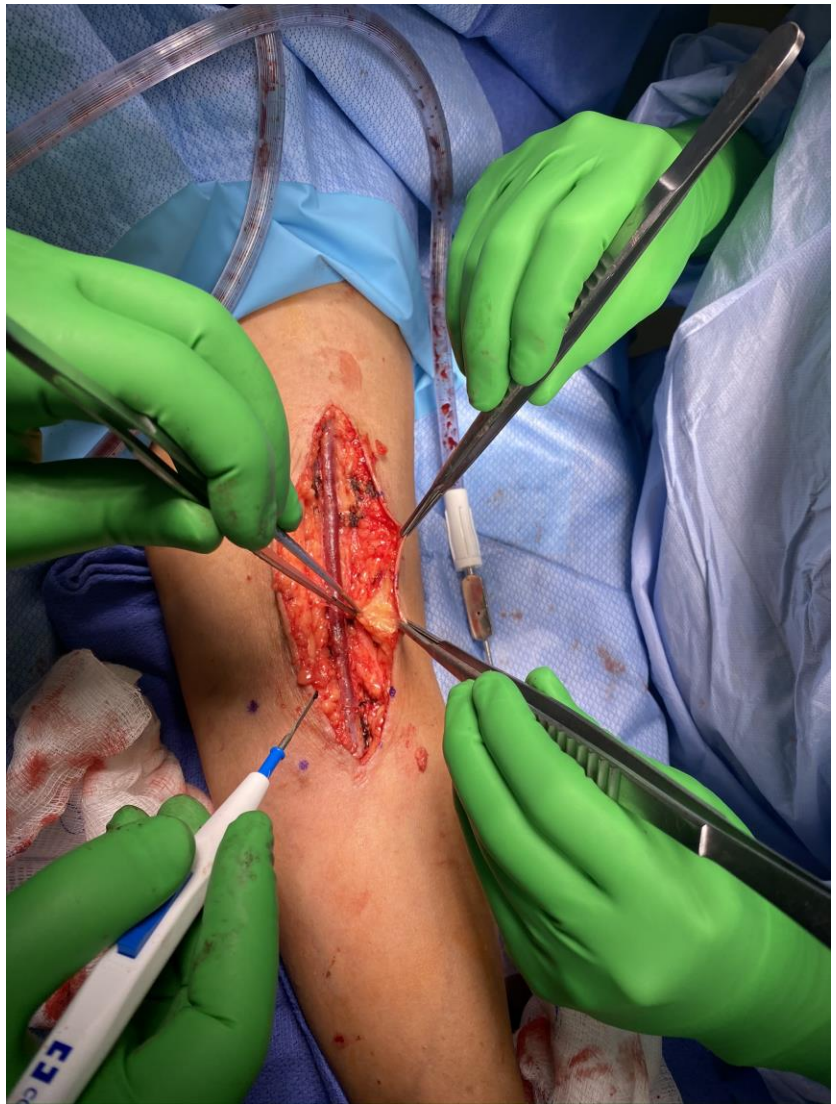


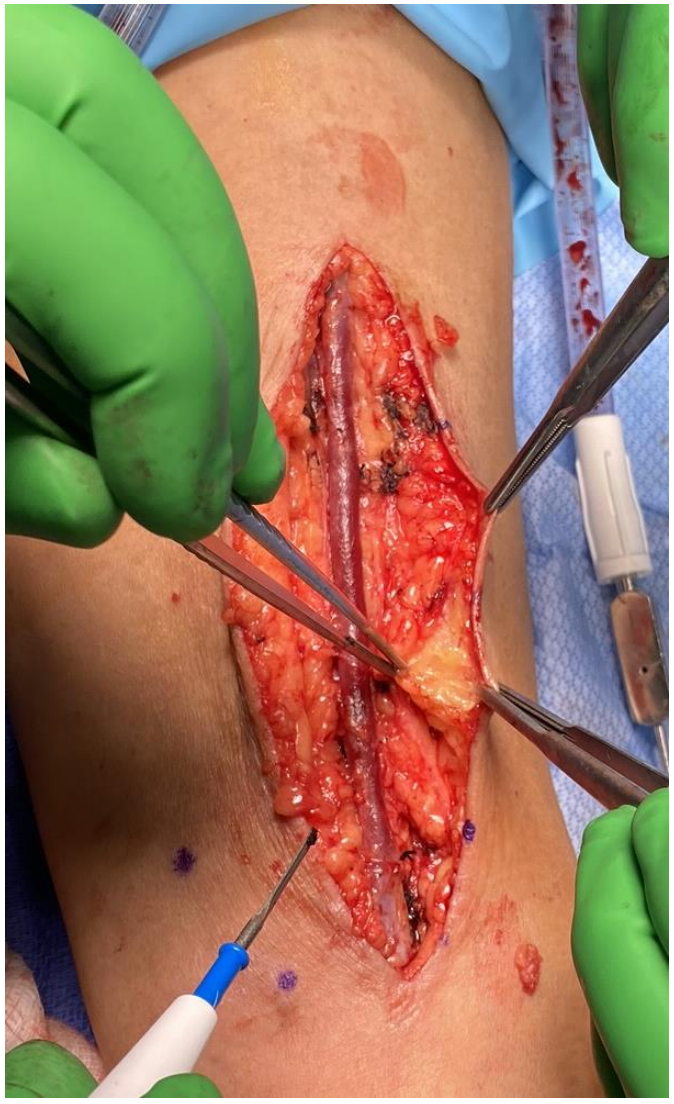

Anastomosis – radial artery to radial vein

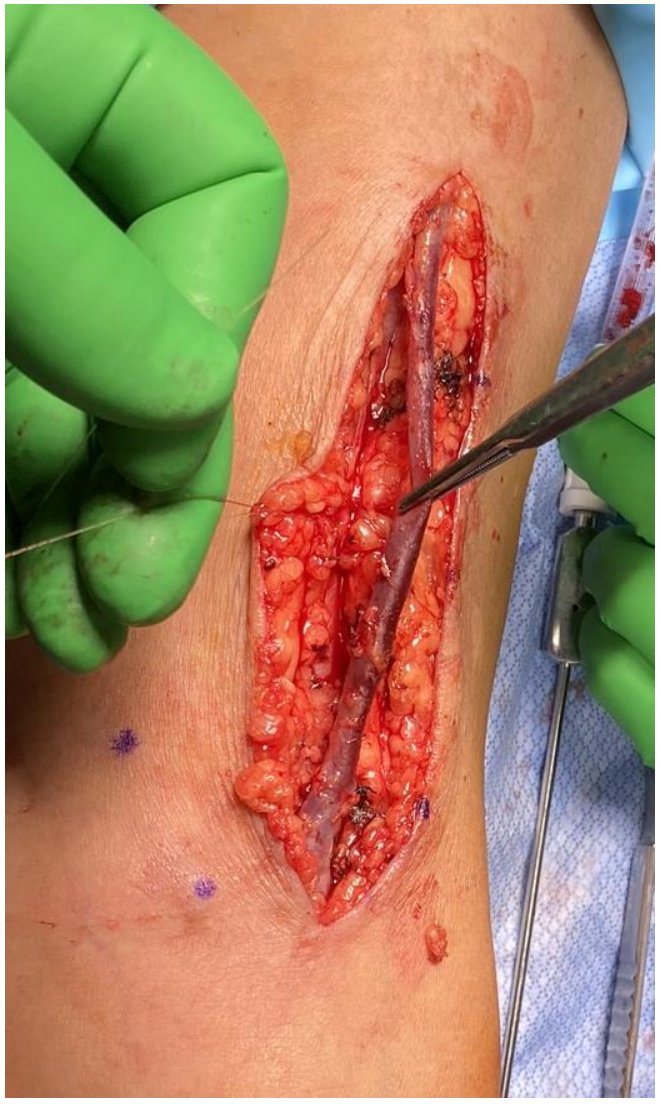
Good thrill, but unreliable to access











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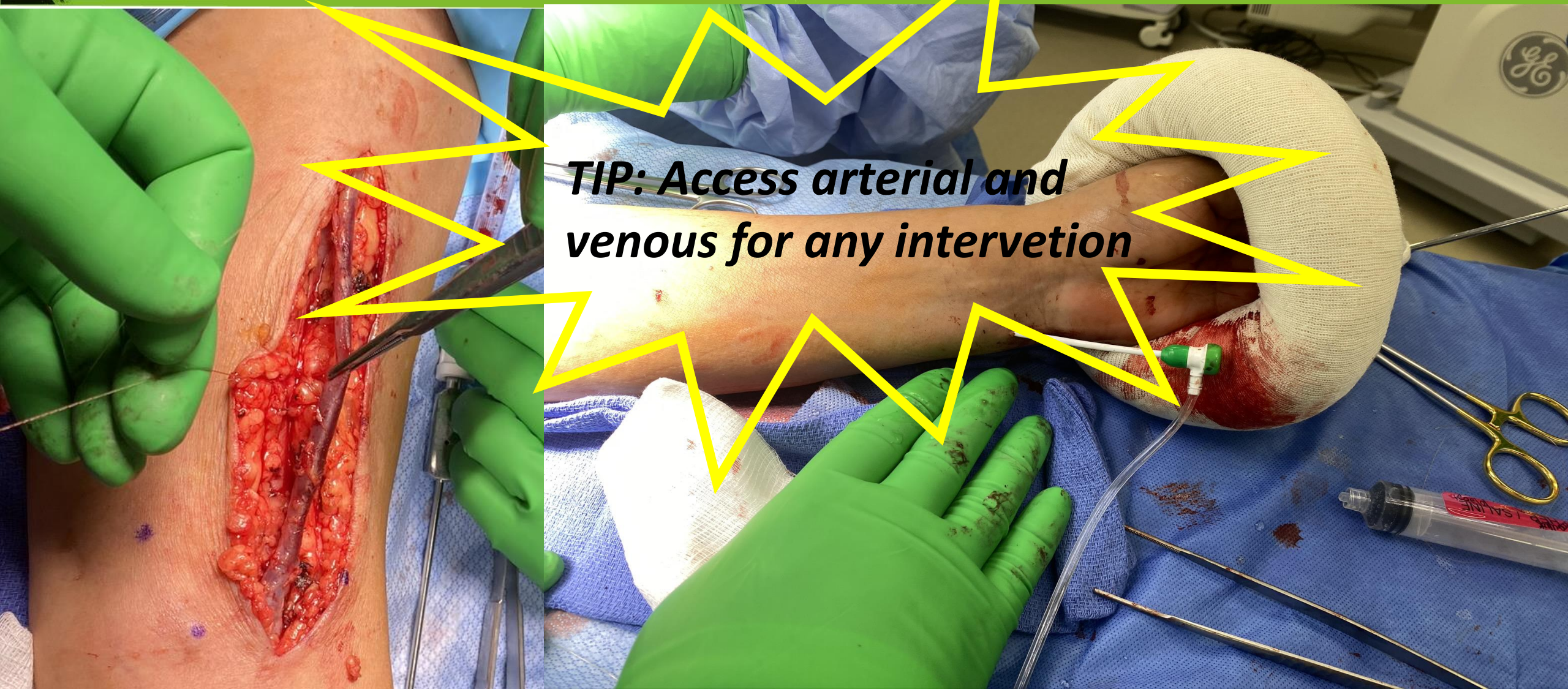
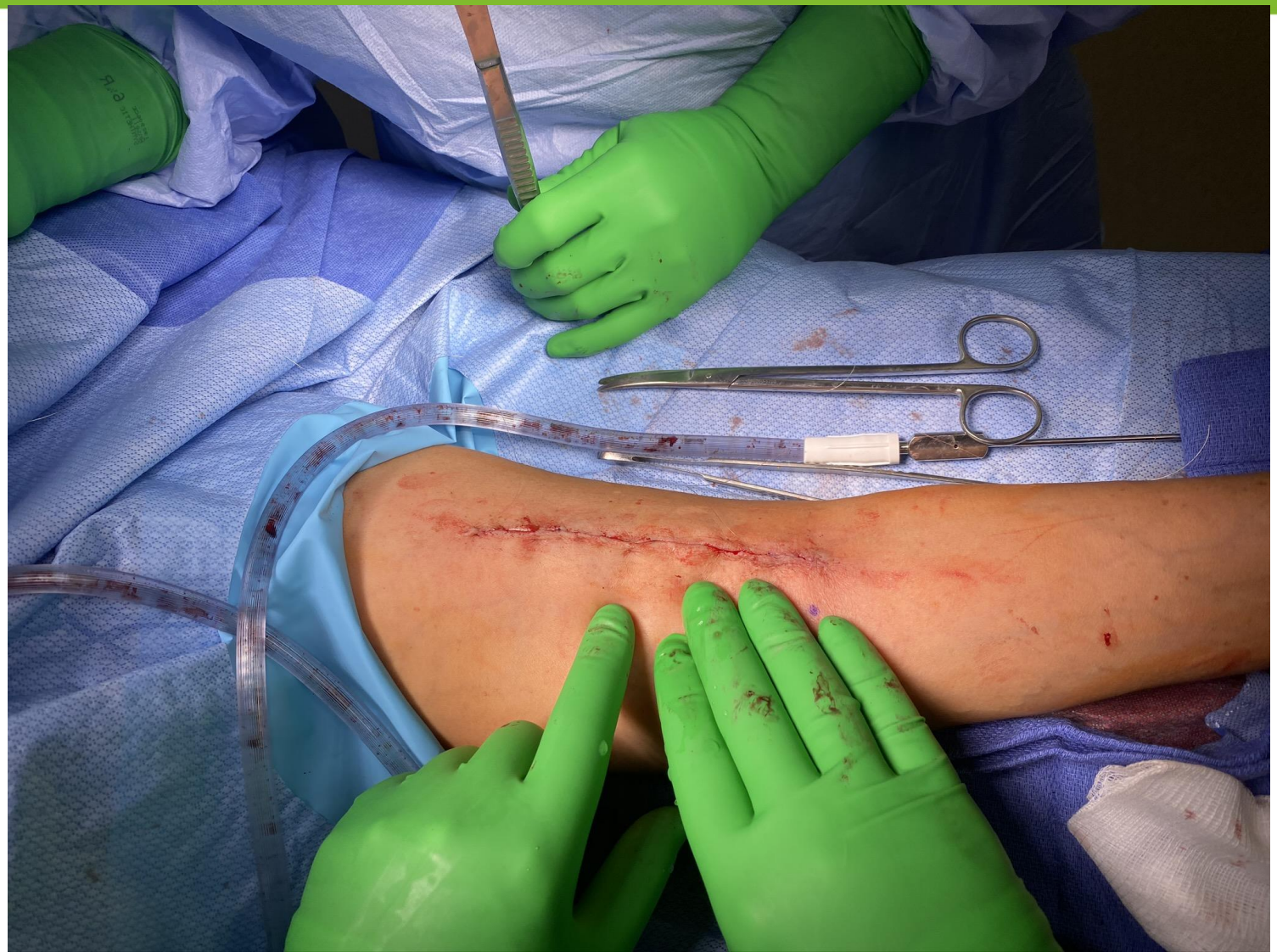
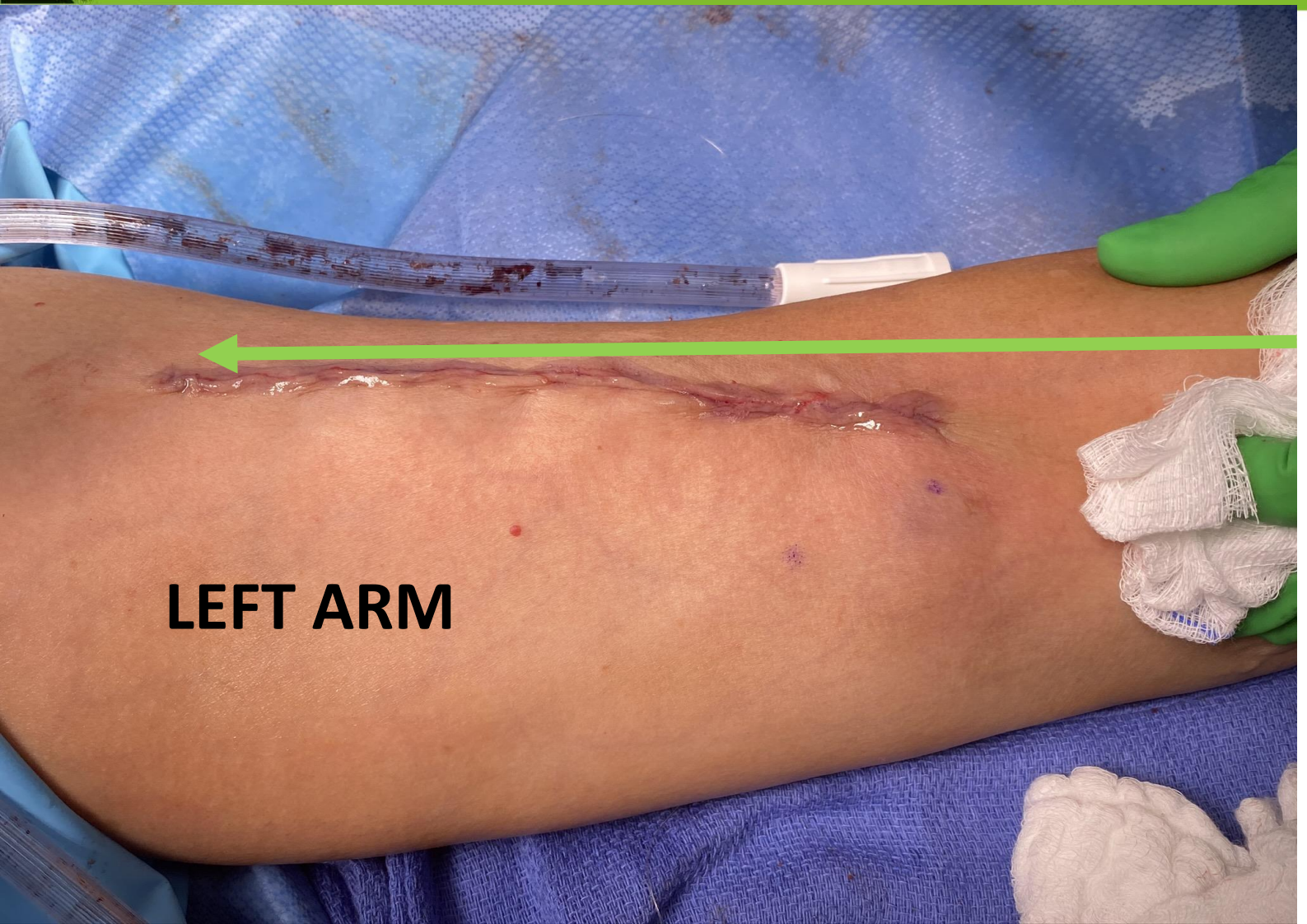


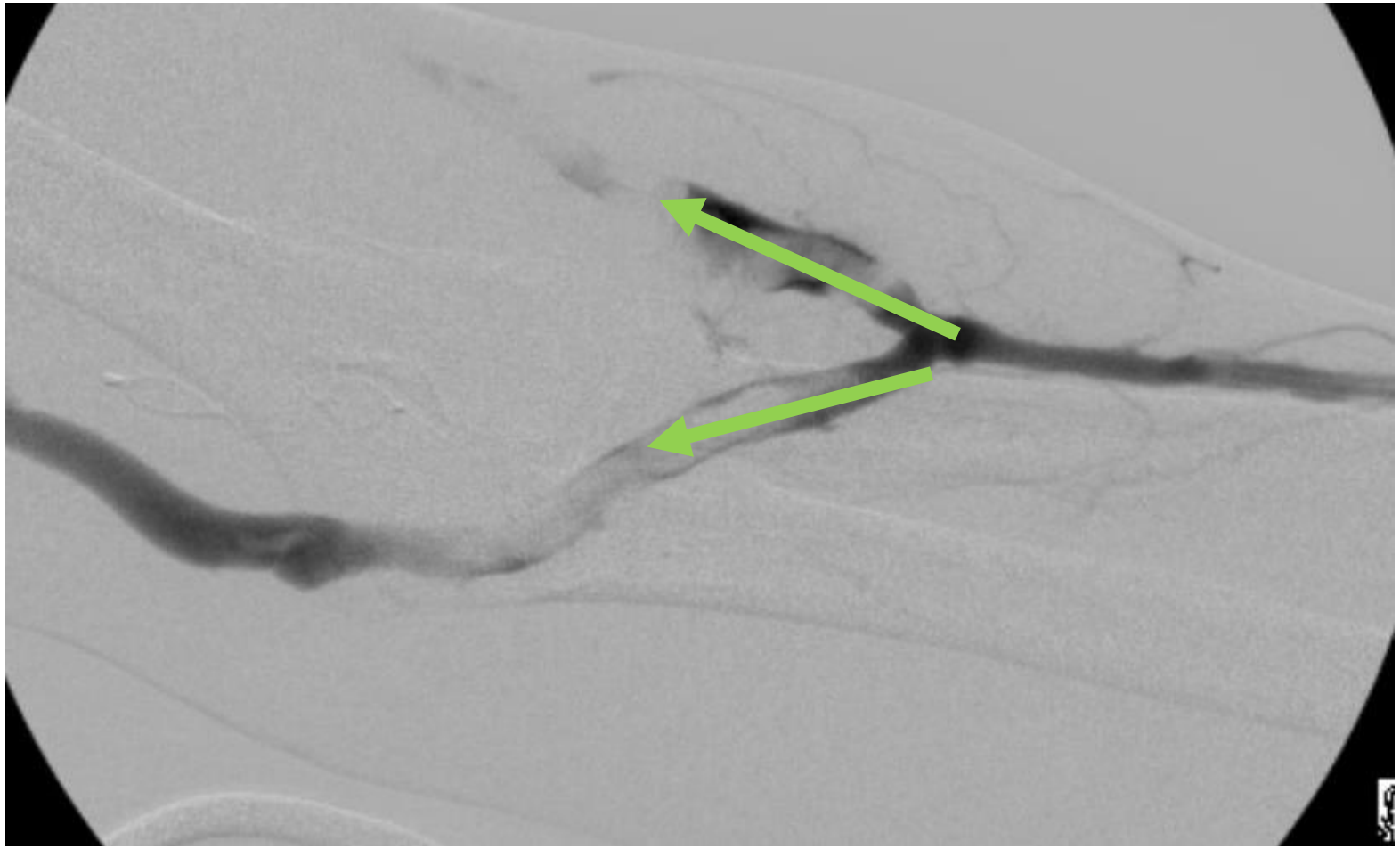




ADVANTAGES

- Always know where the avf is located – lateral to the incision
- Anesthetic near the incision site – ie access does not hurt when accessed as there is an incision next to the vein

WHAT ABOUT THROMBOSIS?



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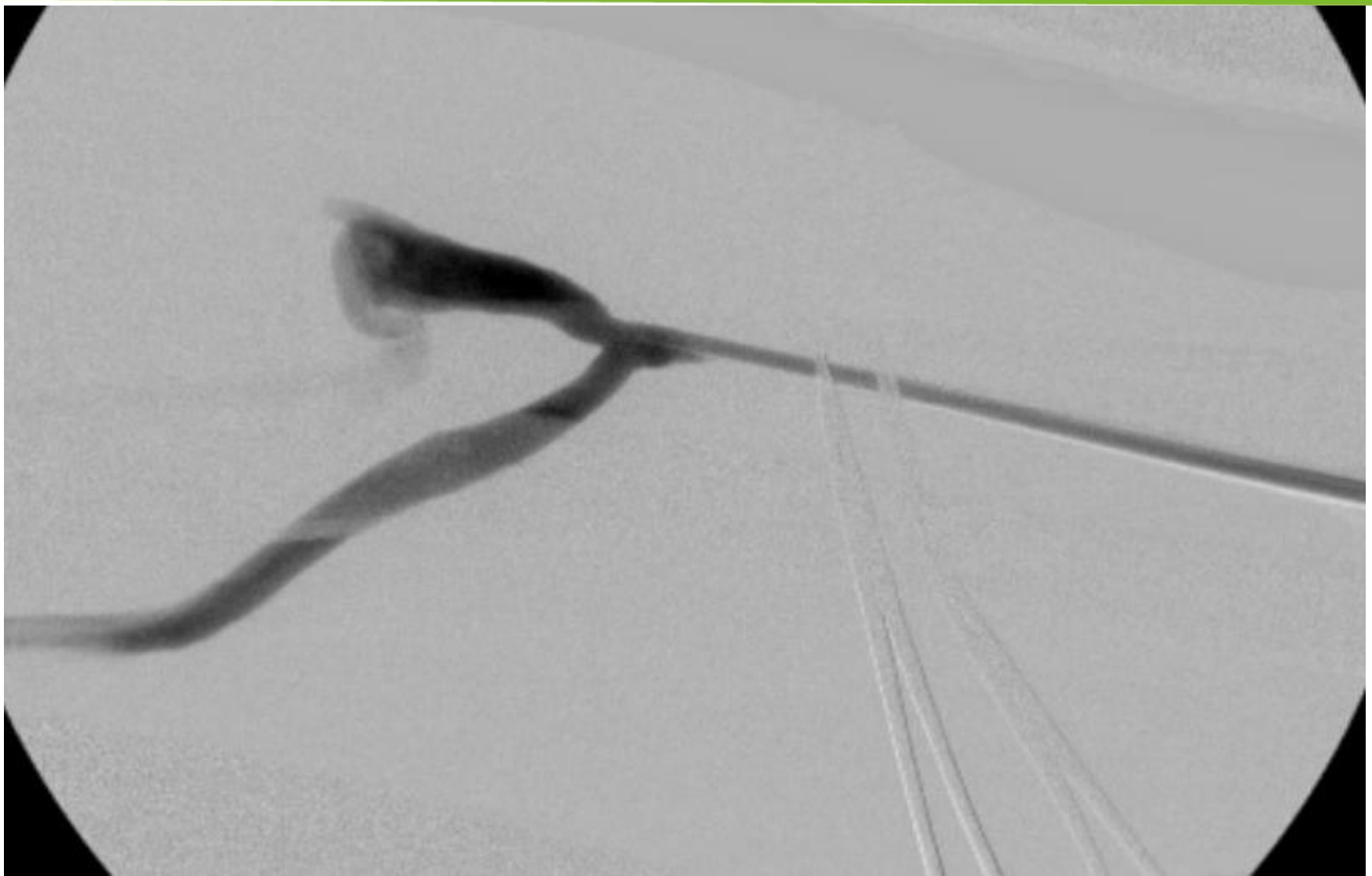

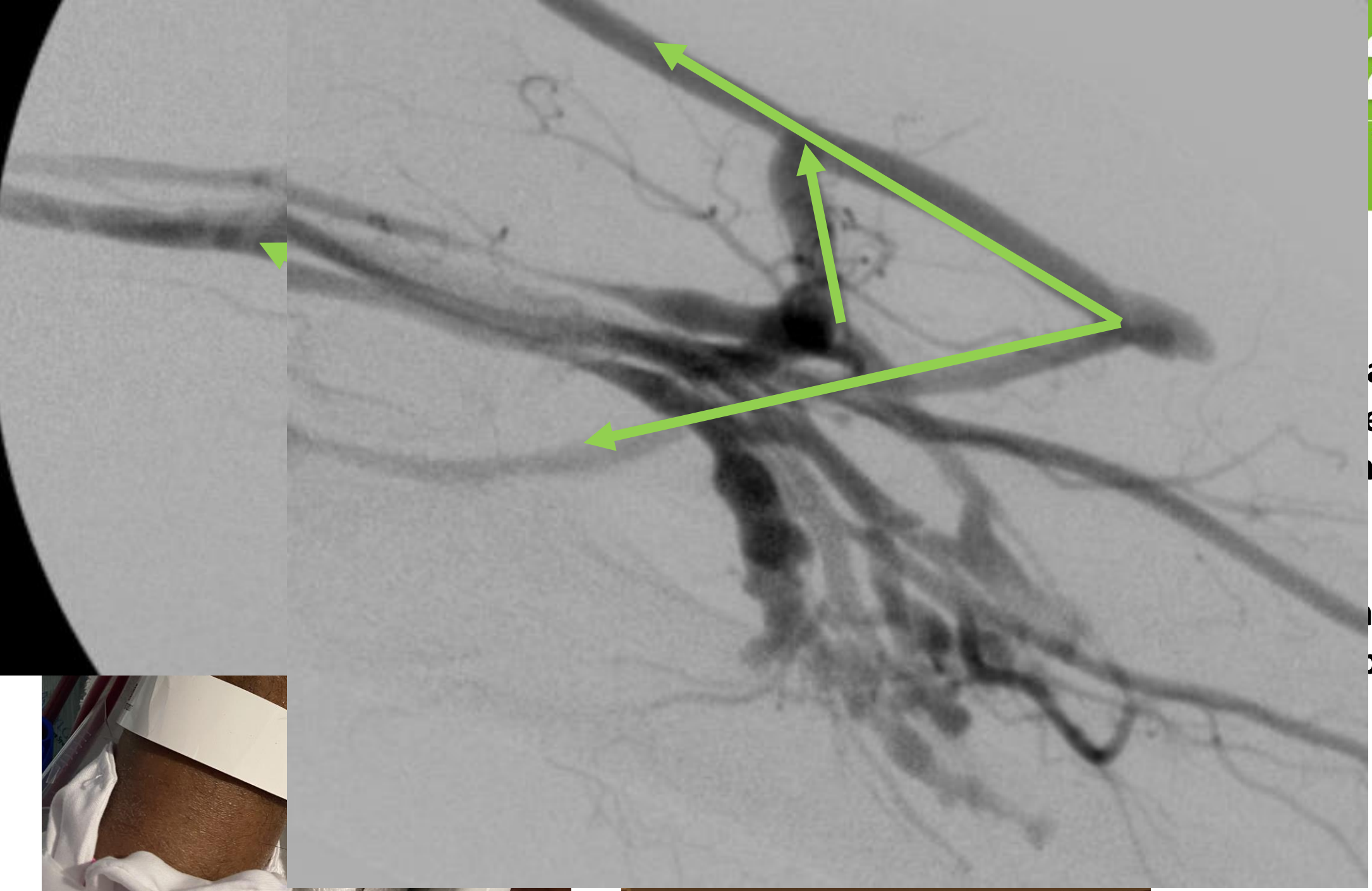

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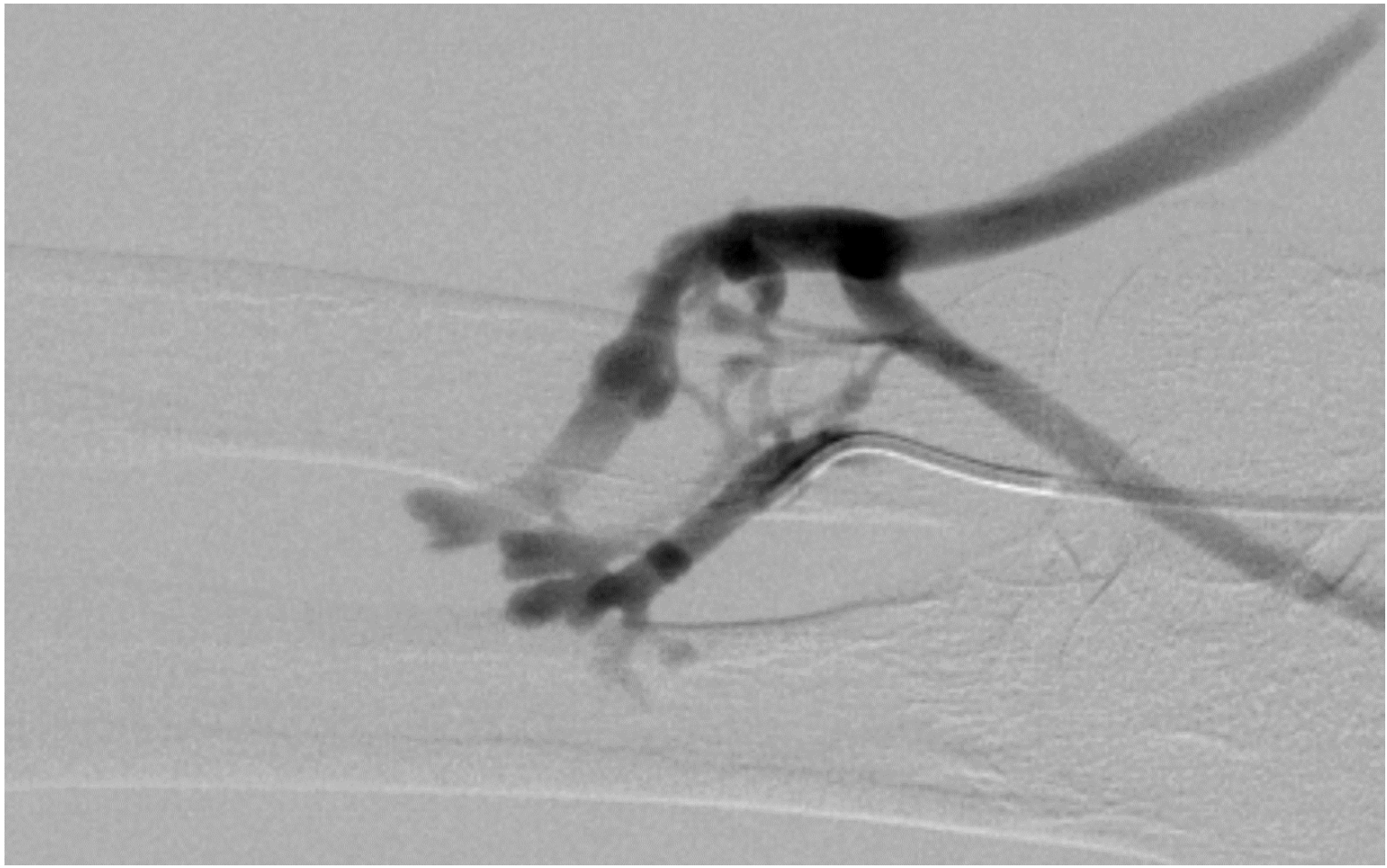
you would
a – open or
eous
gly, often
flow (ie to
vein/radial
e brachial)
patent

CONCLUSIONS

- The anatomy is unique – EMBRASS IT!!!!
- Blazing new trails is not always easy
- If not ready to be used, same as open, angiogram
- Do not be afraid to PTA – cutter is your friend
- If in doubt, superficialize – make it easy



CONTROVERSES ET ACTUALITES EN CHIRURGIE VASCULAIRE

CONTROVERSIES & UPDATES IN VASCULAR SURGERY

JANUARY 23-25 2020

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Thank You!

Merci!

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