

Embolization of PTEN associated vascular malformation


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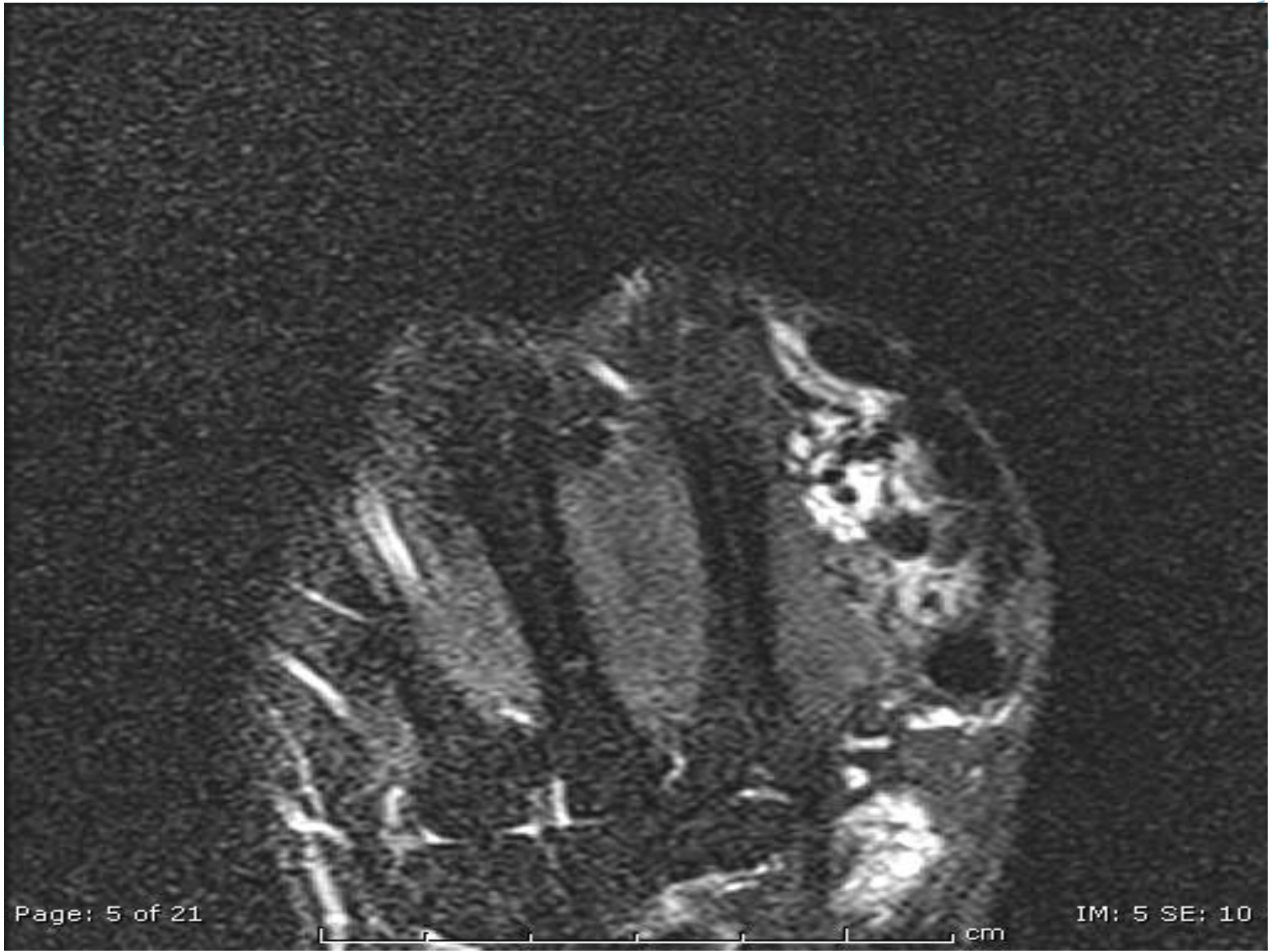


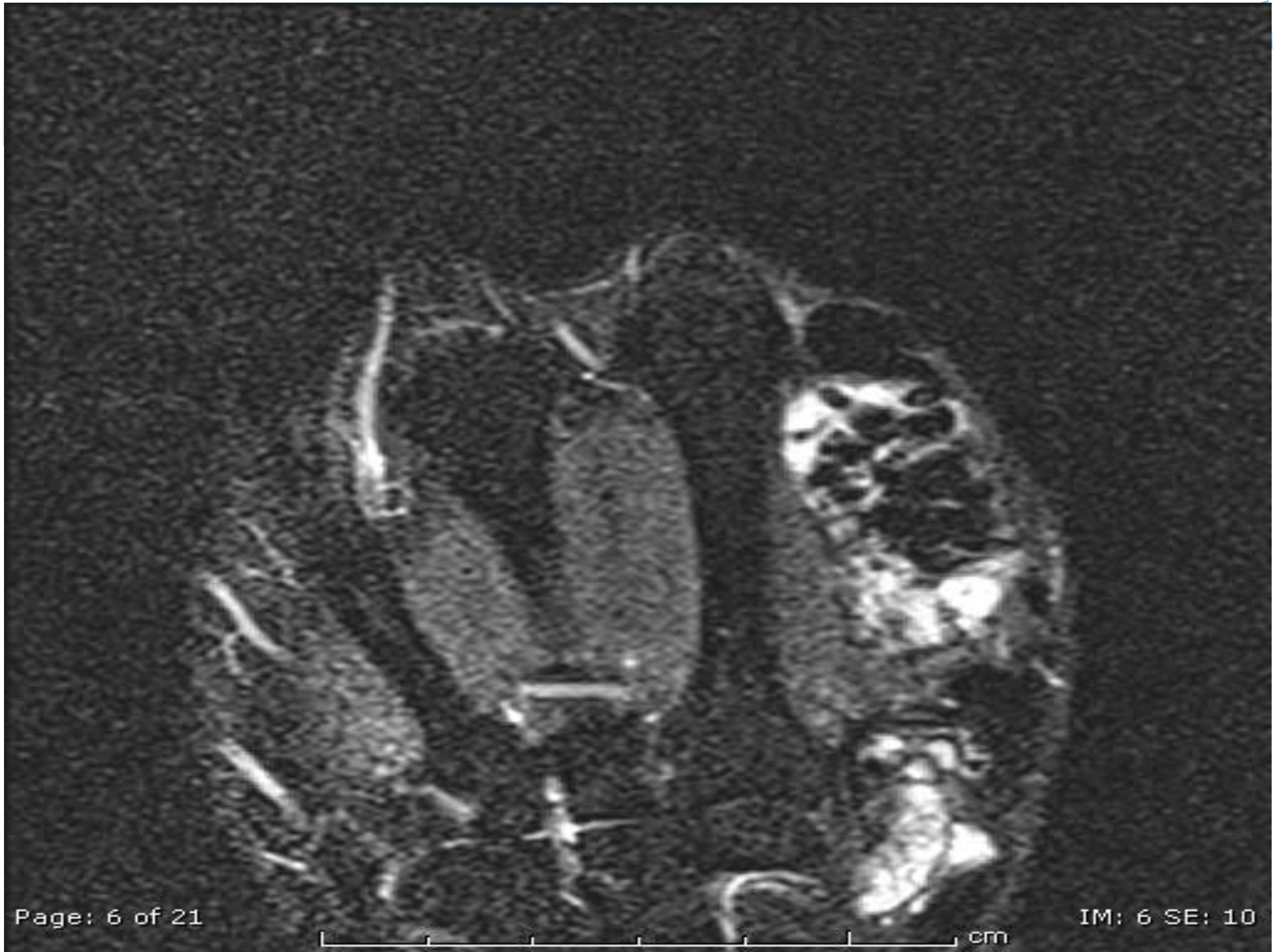
Thenar Vascular Malformation

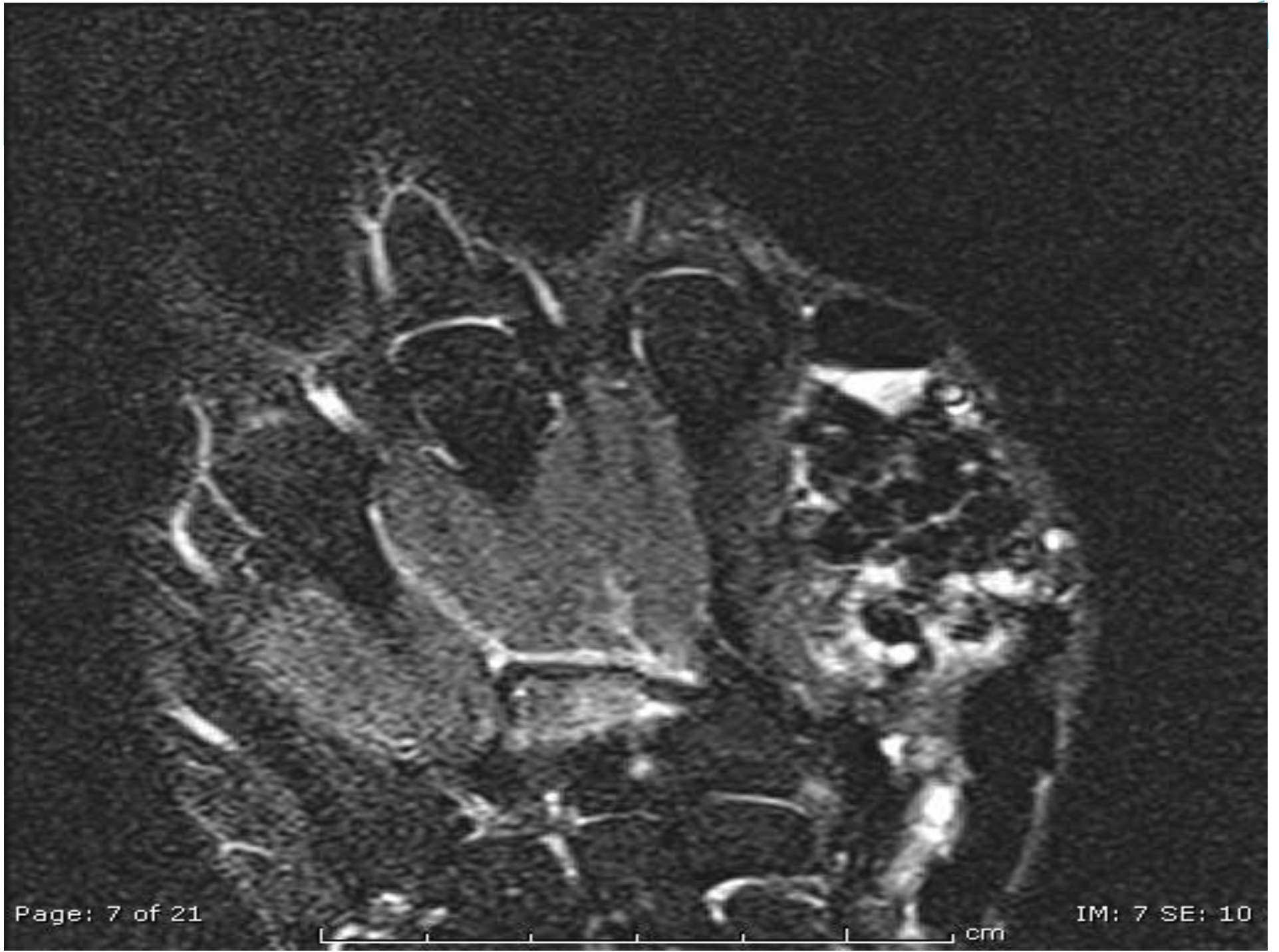
- 30-year-old female with history of PTEN hamartoma syndrome/Cowden syndrome
- Left hand thenar vascular malformation
- Increased size of the affected portion of the left hand with throbbing and pain
- PMH/PSH:
 - 2 prior resections of the left hand lesion in 2000 and 2010.
 - Thyroidectomy in 2007 for thyroid cancer.
 - Family History: Mother also had PTEN.

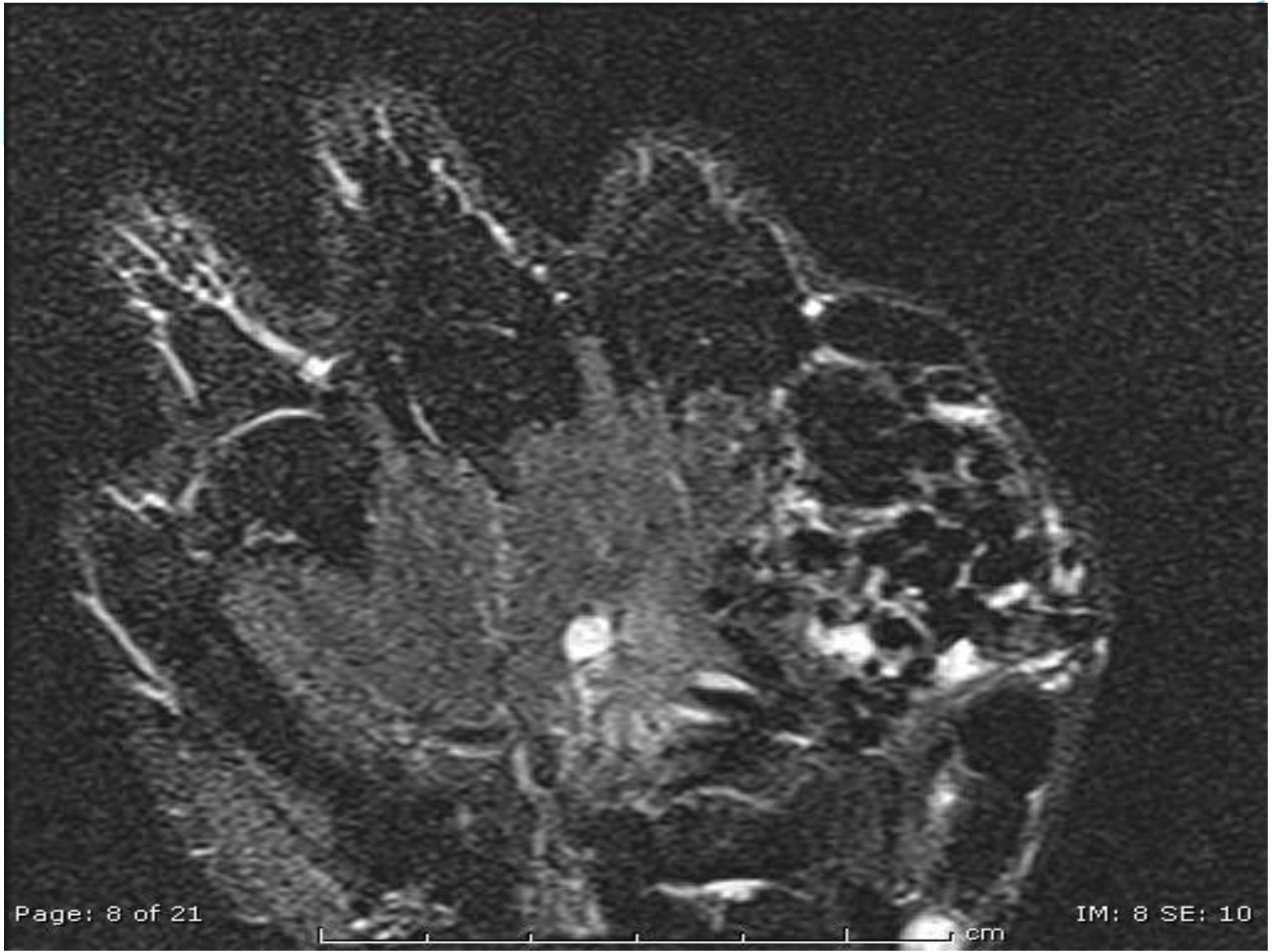


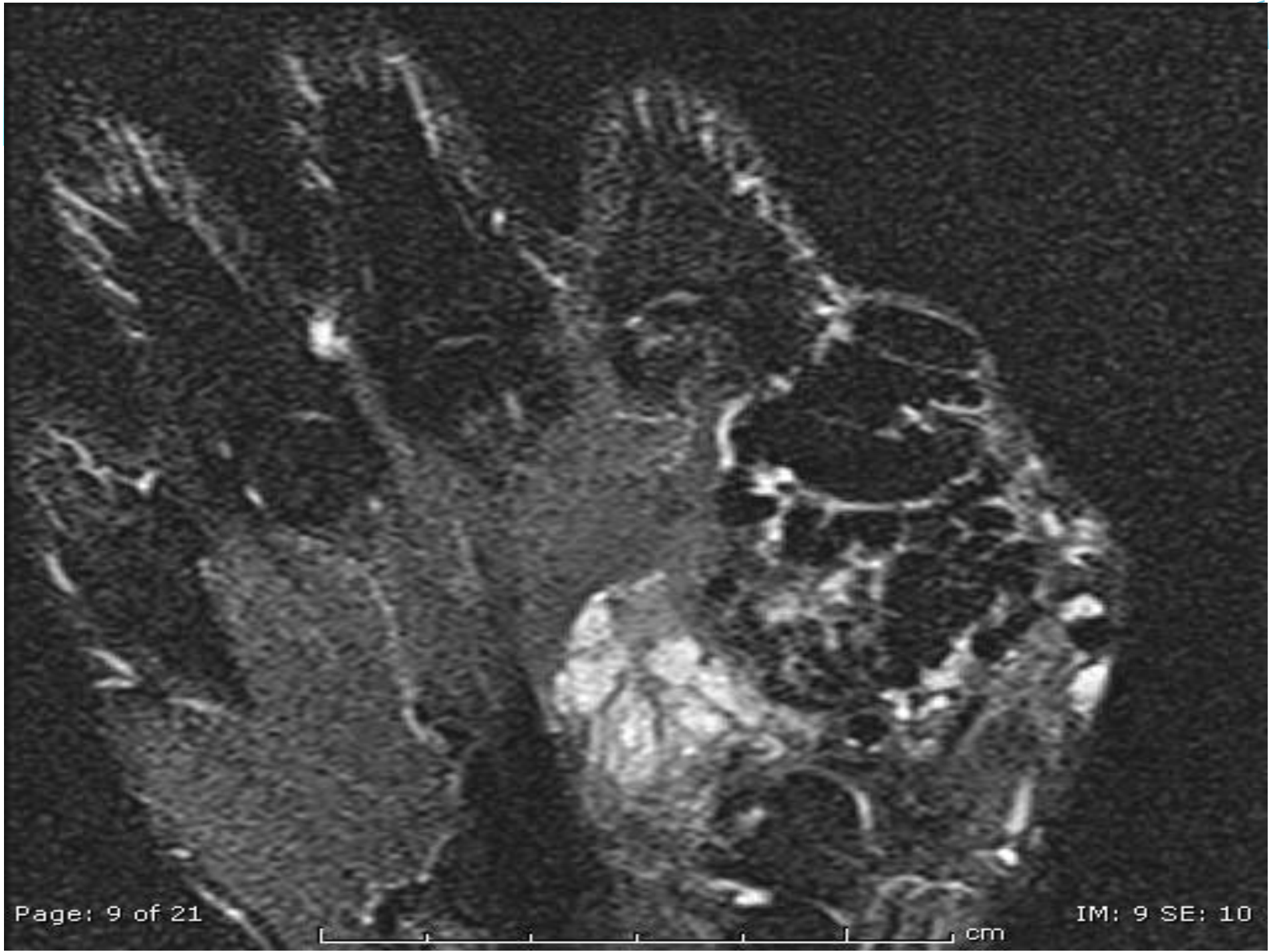
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- Physical Examination:
 - Normal painless range of motion of all the digits, except for mild limited range of motion of the thumb especially in palmar abduction.
 - Thumb have spongiform changes consistent with enlarged vasculature, most striking on the 1st web space where there is a very large dorsal vein with palpable flow through it.
 - The lesion itself is quite pulsatile in the 1st web space, with an obvious palpable bruit.
 - Good sensation and good vascularity with a booming 2+ radial pulse.
 - Review of the MRI reveals abnormal arteries, veins and indeterminate vessels admixed in nodular segregation with a very large draining dorsal vein.

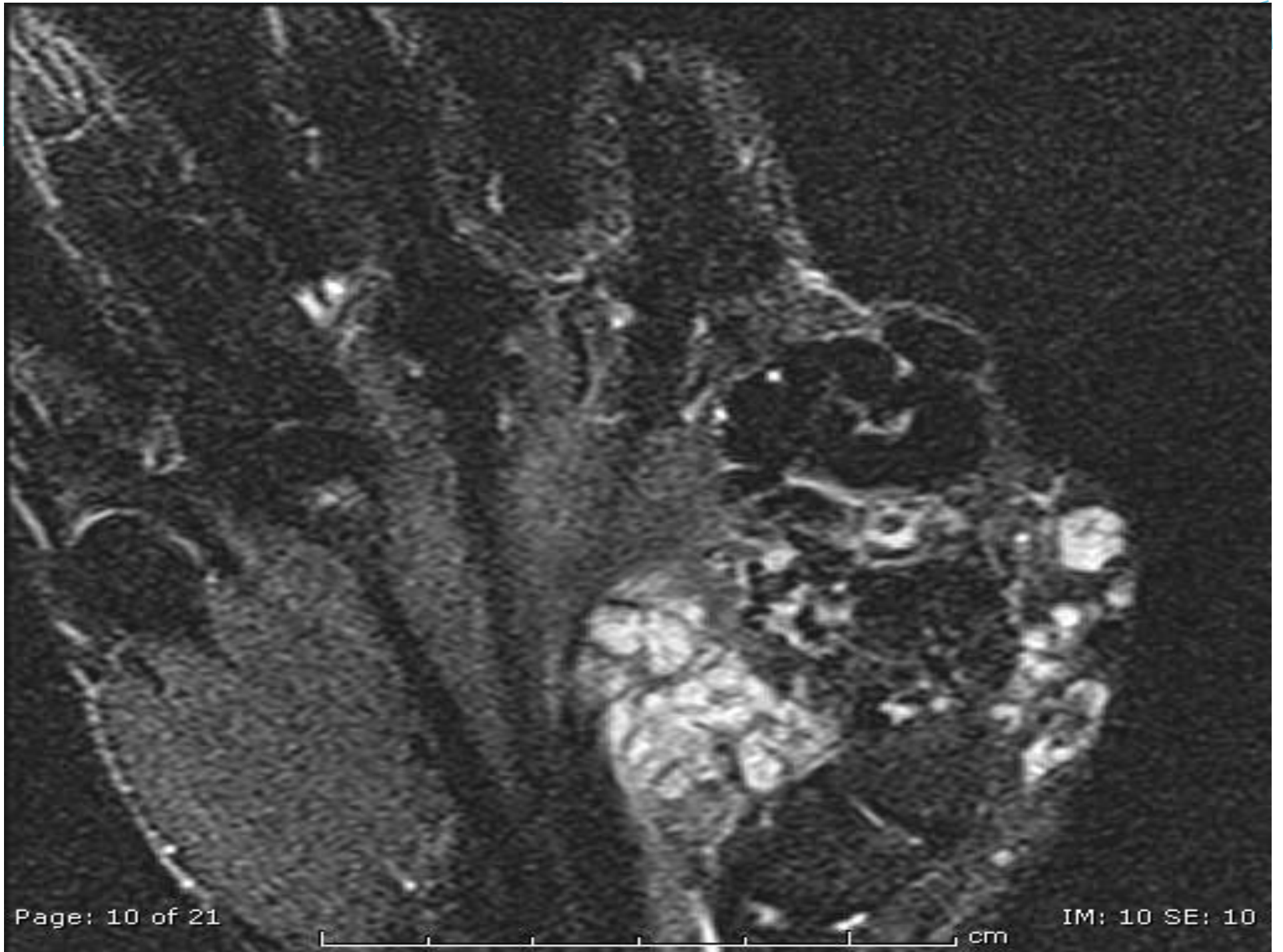


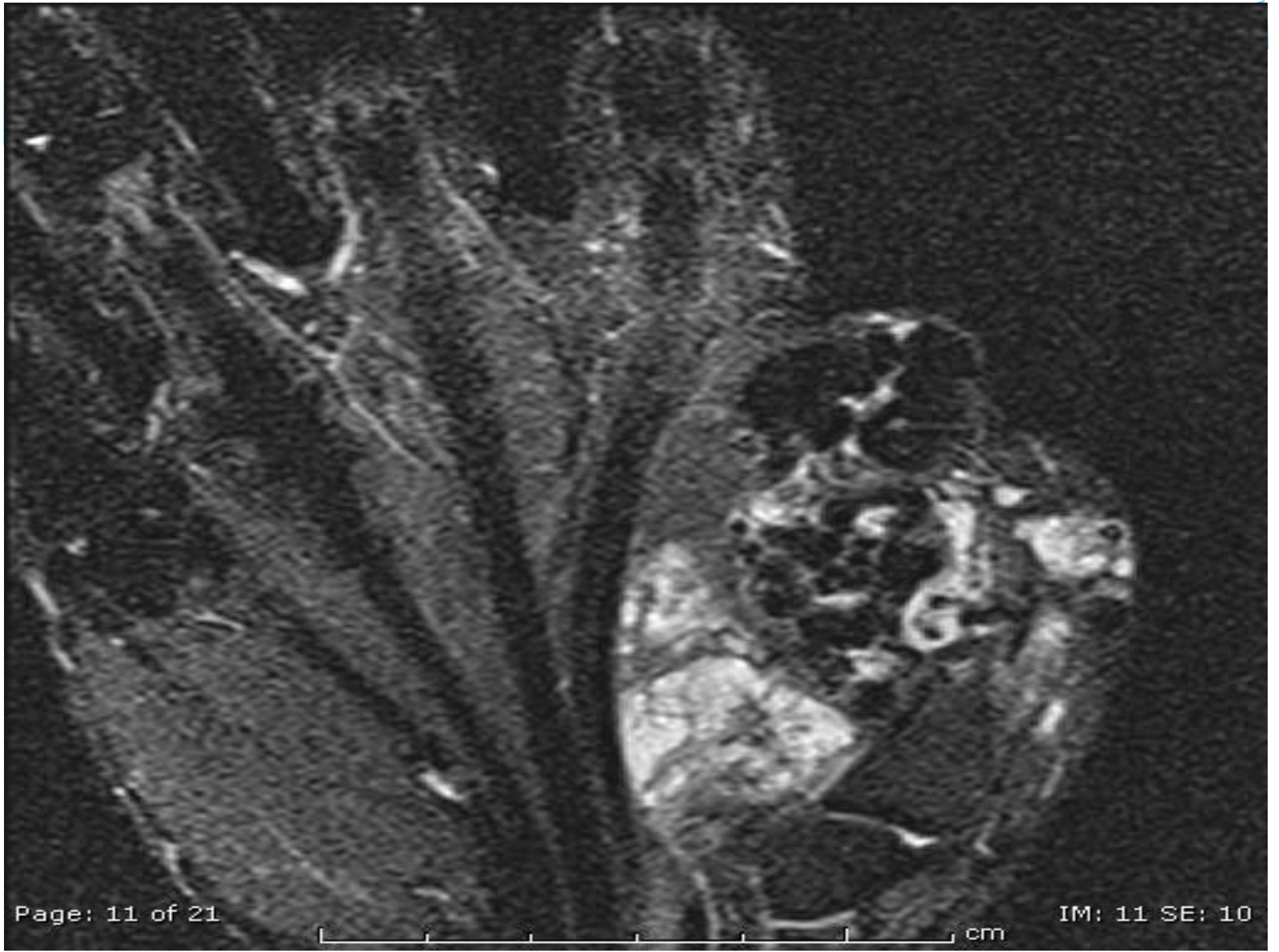


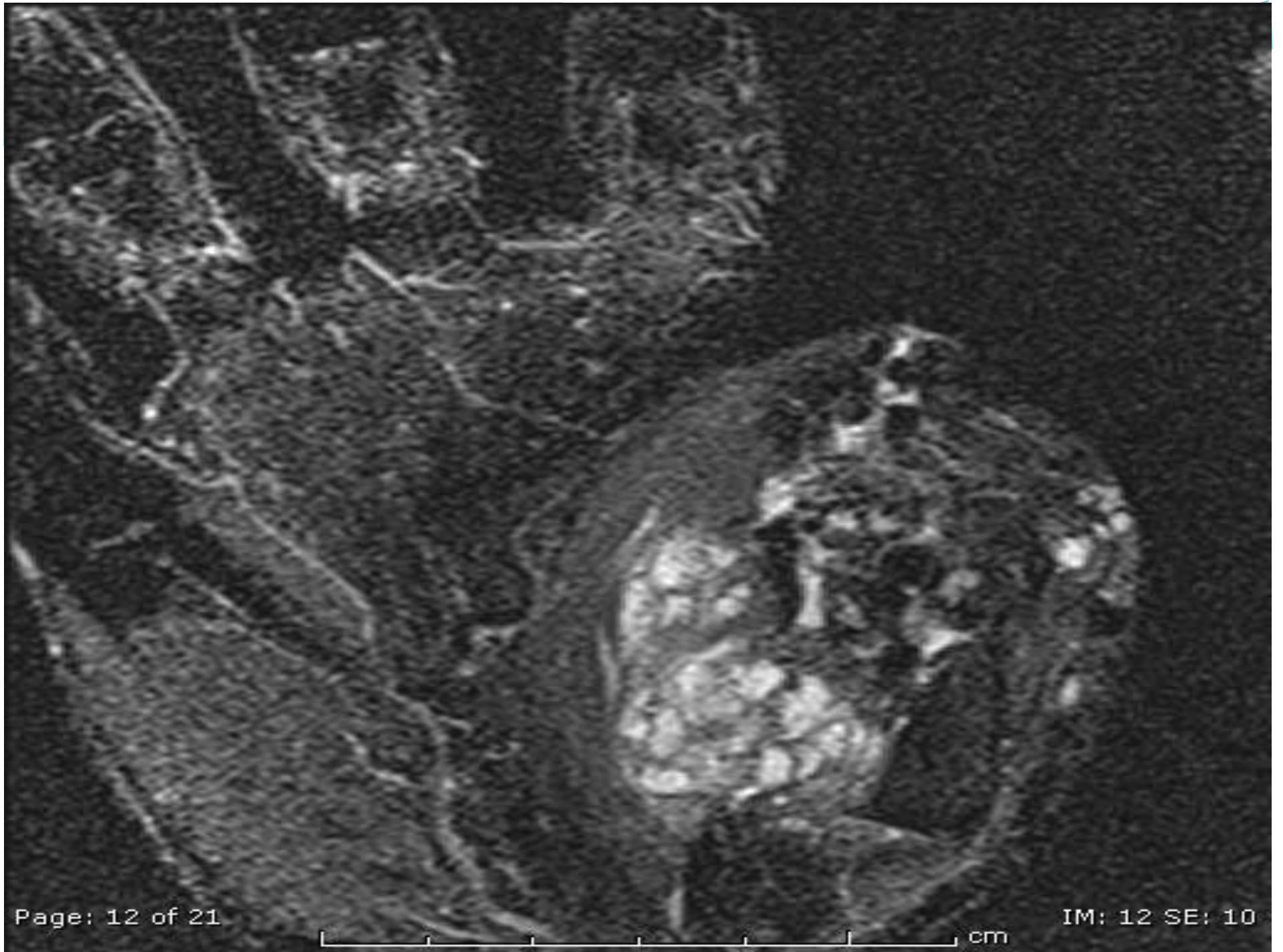




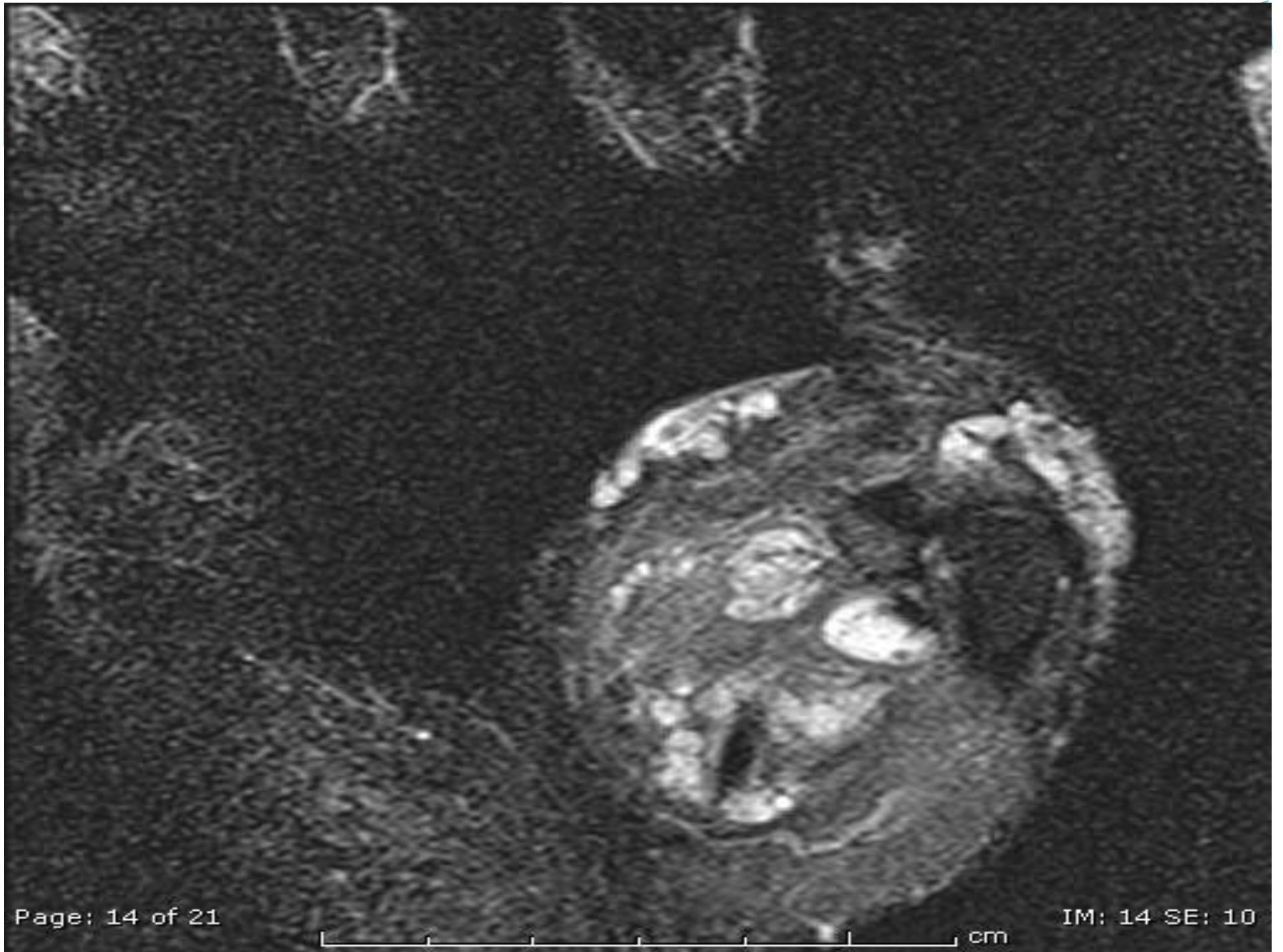




















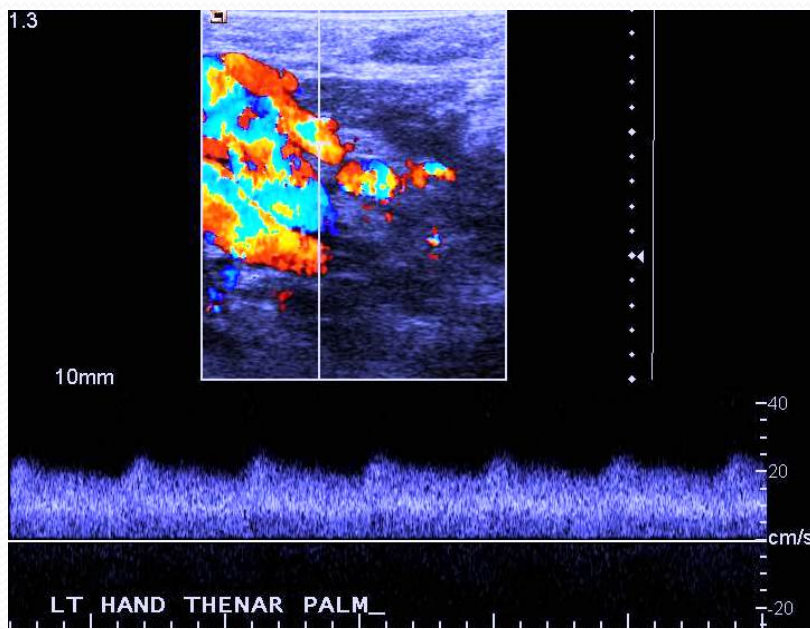
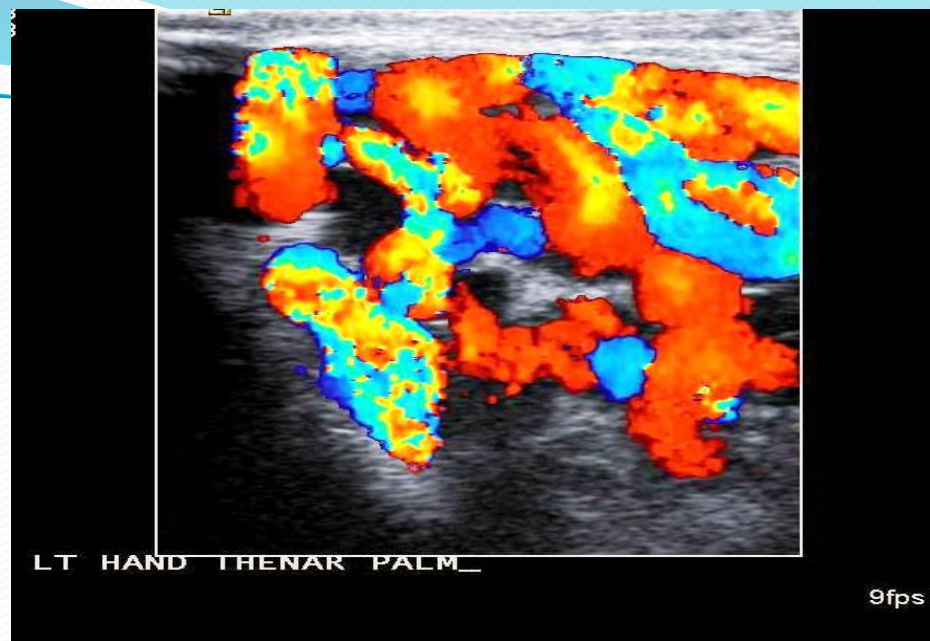


PROCEDURE: Left Hand high flow Vascular Malformation Angiography and Embolization

- ANESTHESIA: General anesthesia, 1% lidocaine was used for local anesthesia.
- CONTRAST VOLUME: 120 mL Optiray-240
- EMBOLIC AGENTS: 25% glue (Histoacryl 2 mL, Lipiodol 6 mL)
-
- RADIATION DOSE: 23 mGy
- COMPLICATIONS: None

TASKS

1. Sonographic guided Cannulation of the right femoral artery.
2. Digital subtraction angiography left upper extremity, including forearm and hand
3. Comprehensive vascular ultrasound of the left hand arteriovenous malformation
4. Sonographic guided Cannulation of the left hand AVM (access site 1), Selective digital subtraction angiography and Glue embolization.
5. Sonographic guided Cannulation of the left hand AVM, (access site 2), Complex manipulation of catheter over the microguidewire, Digital subtraction angiography and Glue embolization
6. Sonographic guided Cannulation of the left hand AVM venous outflow (access site 3), Selective angiography and Glue embolization.
7. Sonographic guided Cannulation of the left hand AVM venous outflow(access sites 4, 5, 6, 7), Selective venography and Glue embolization at access sites 4, 5, 6, 7.
8. Sonographic guided Cannulation of the left hand AVM venous outflow(access sites 8, 9), Selective venography and Glue embolization at access site 8.
9. Sonographic guided Cannulation of the left hand AVM venous outflow(access sites 10, 11, 12), Selective venography and Glue embolization at access sites 10, 11, 12.
10. Completion arteriograms of the forearm and hand.





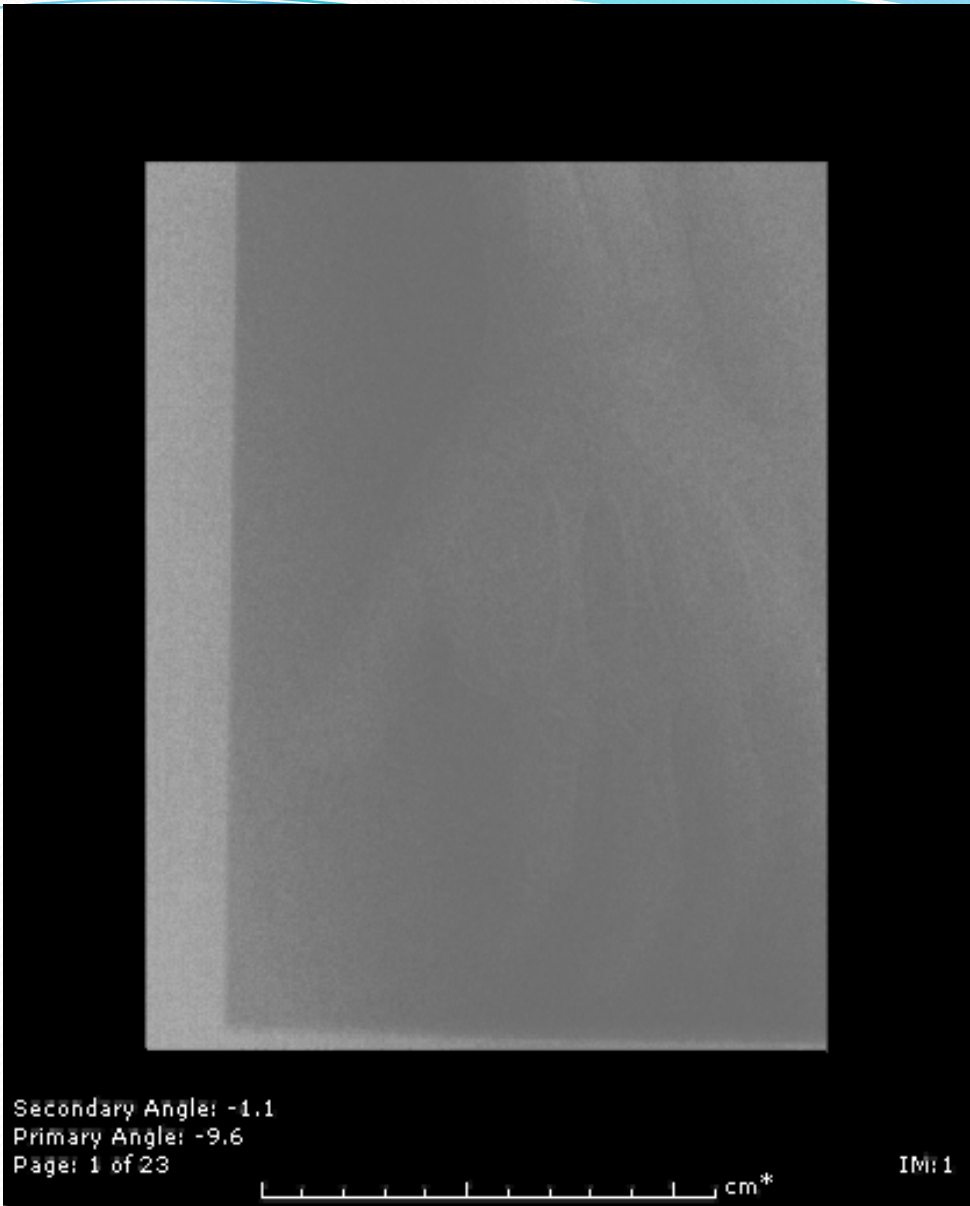
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Primary Angle: -12

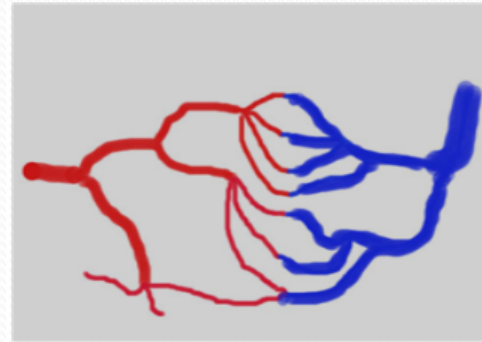
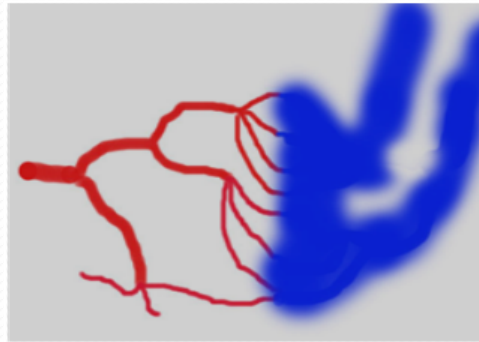
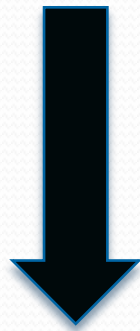
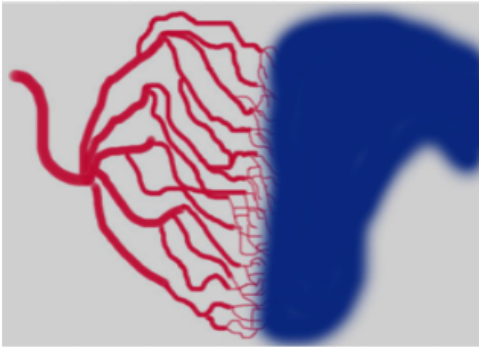
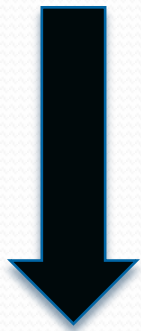
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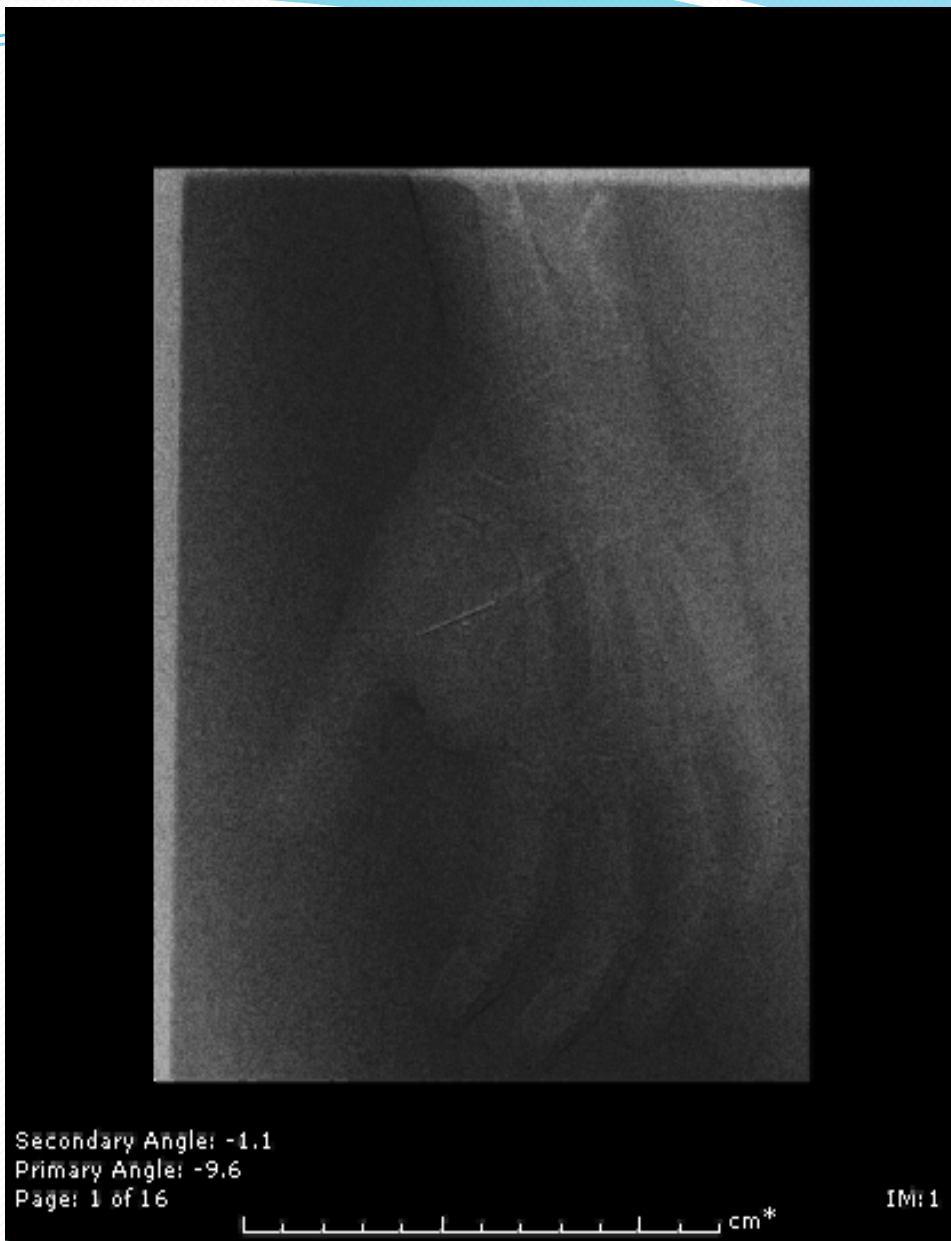
_____ cm*

IM:1



Embolization of Draining Veins

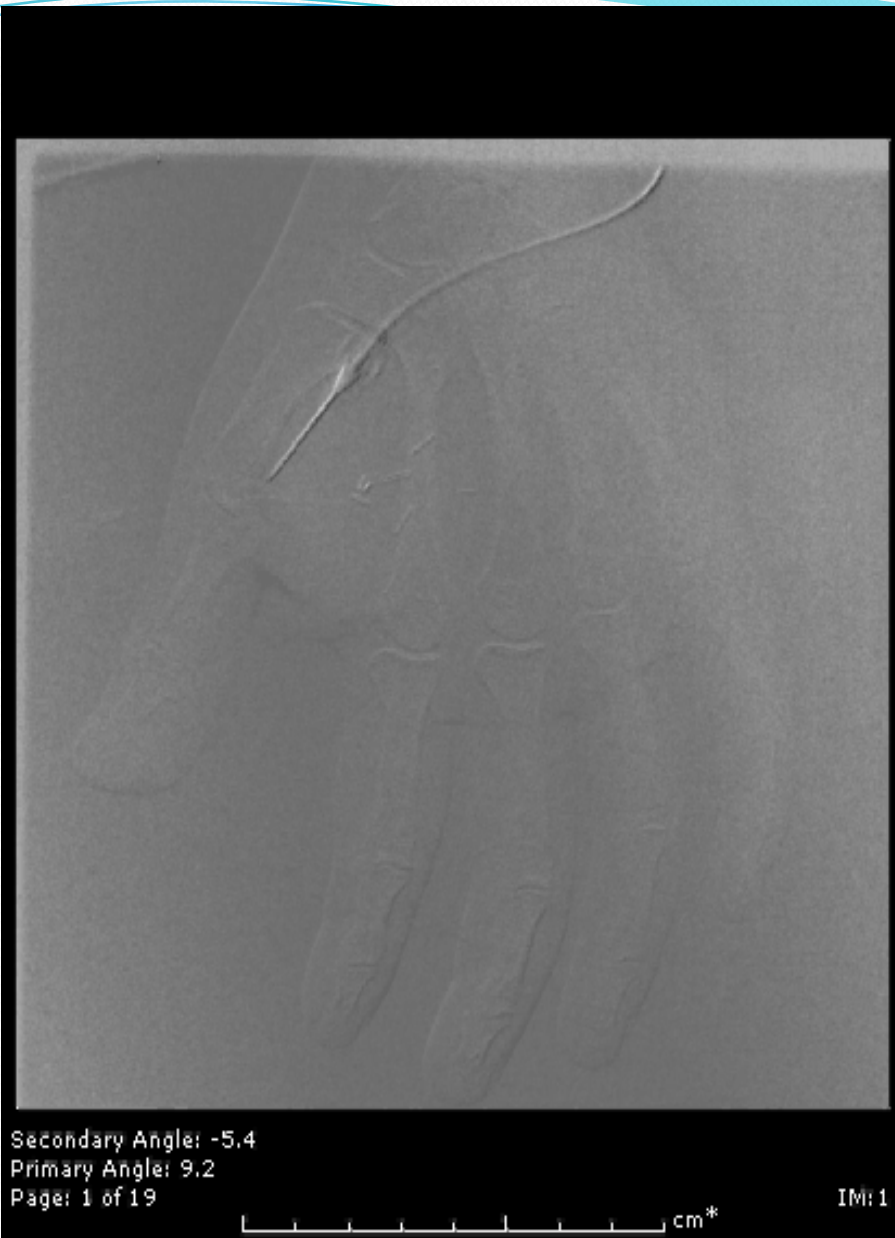




Secondary Angle: -1.1
Primary Angle: -9.6
Page: 1 of 16

cm*

IM: 1



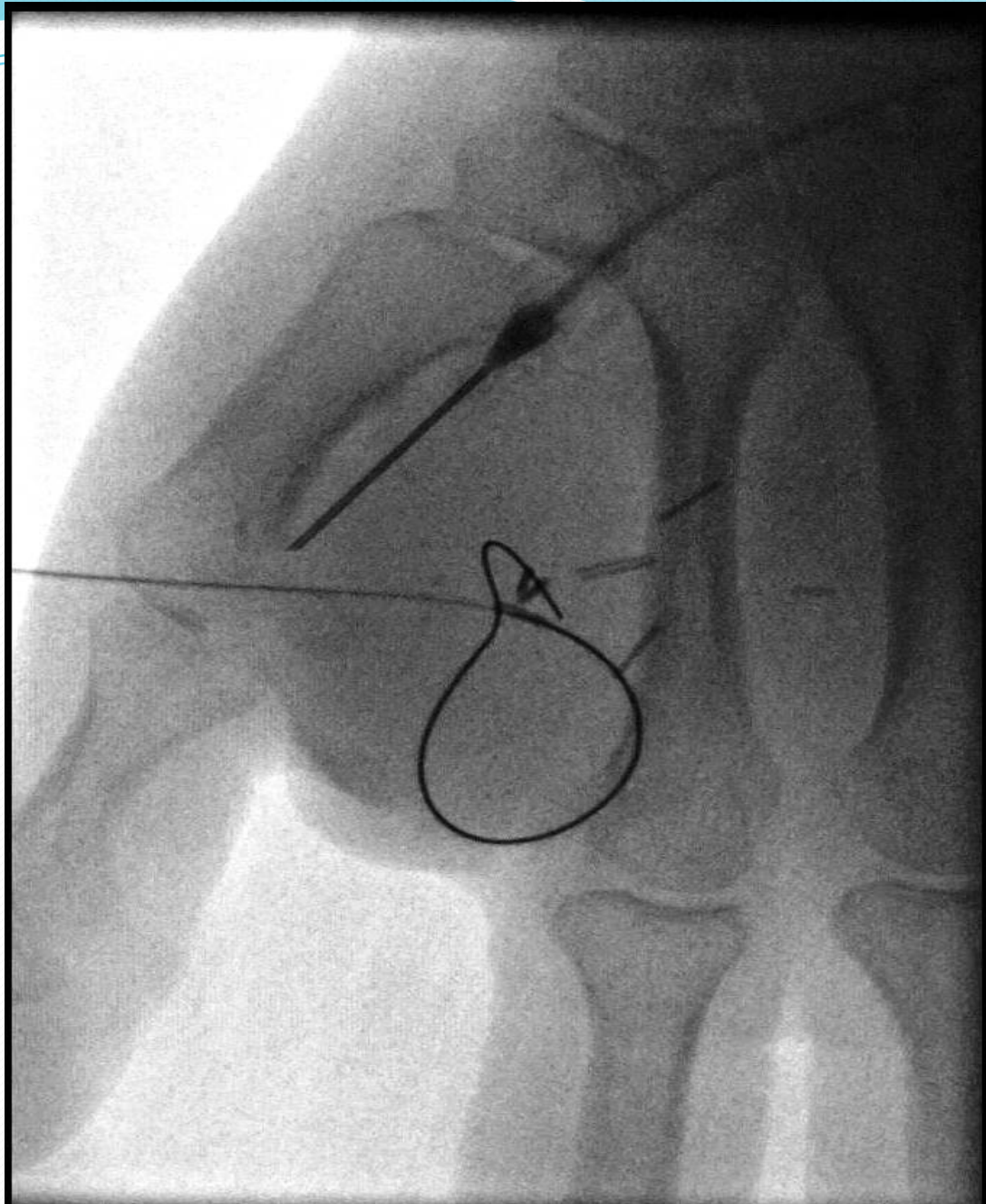
Secondary Angle: -5.4

Primary Angle: 9.2

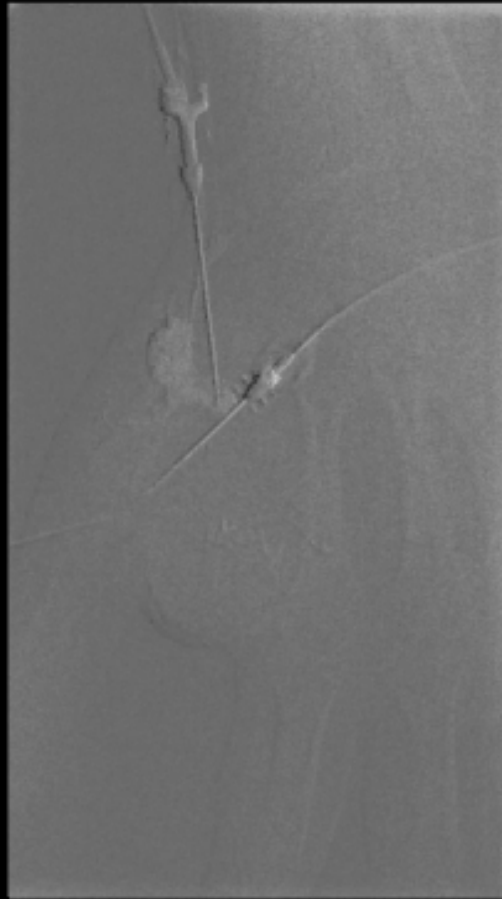
Page: 1 of 19

cm*

IM: 1







Secondary Angle: -5.4
Primary Angle: 9.2
Page: 1 of 14



IM: 1



Secondary Angle: -5.4

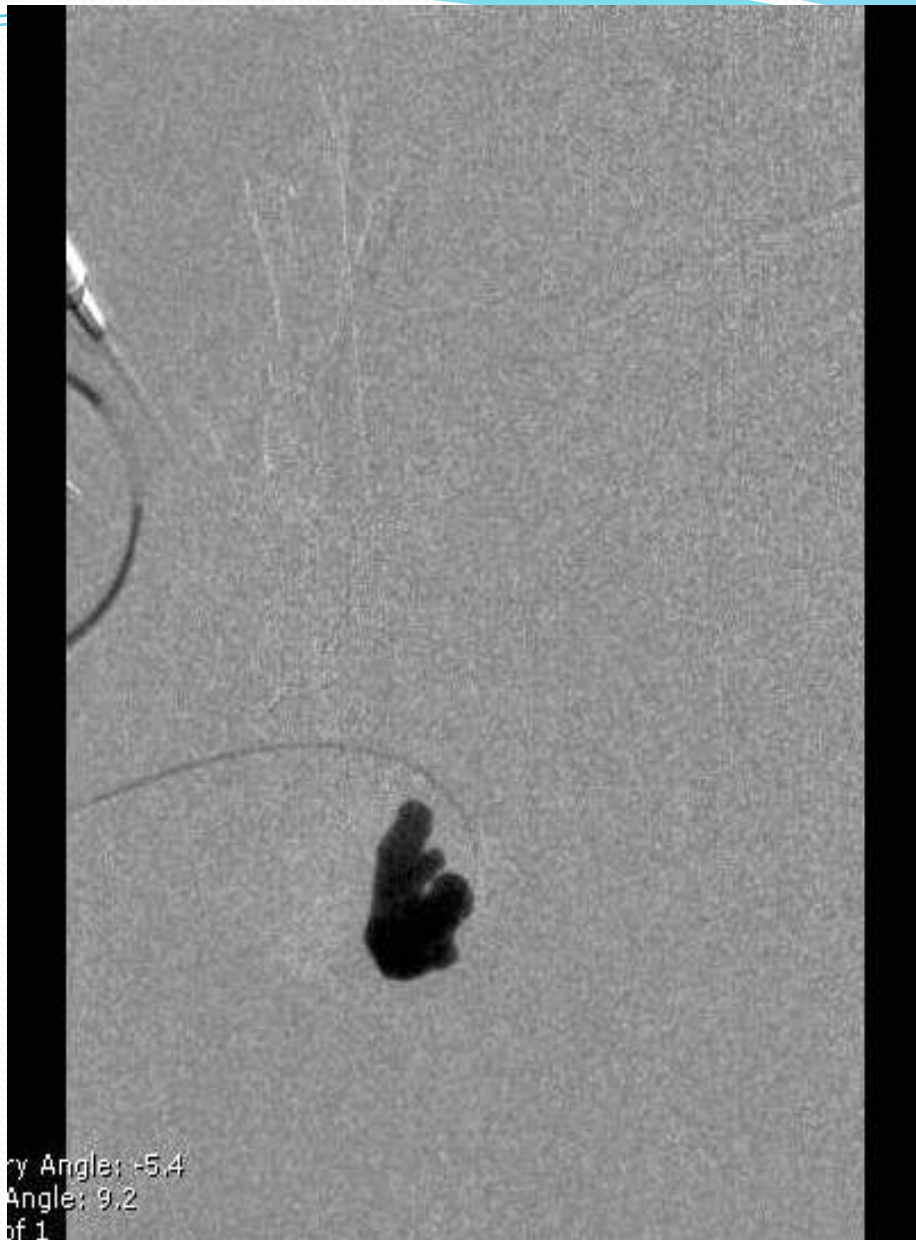
Primary Angle: 9.2

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IM: 1





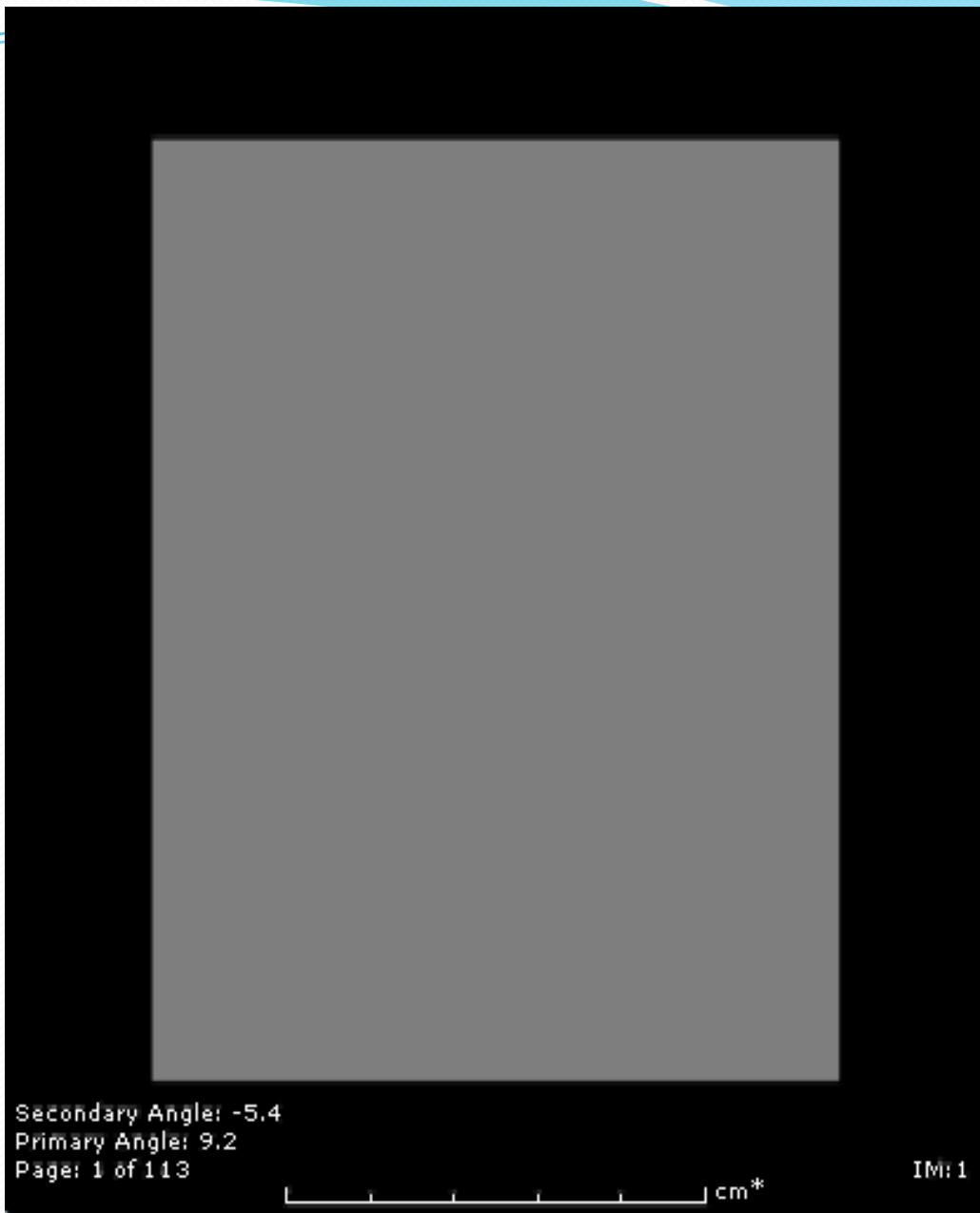
ry Angler: +5.4
Angle: 9.2
of 1



Secondary Angle: -5.4
Primary Angle: 9.2
Page: 1 of 1

IM:71

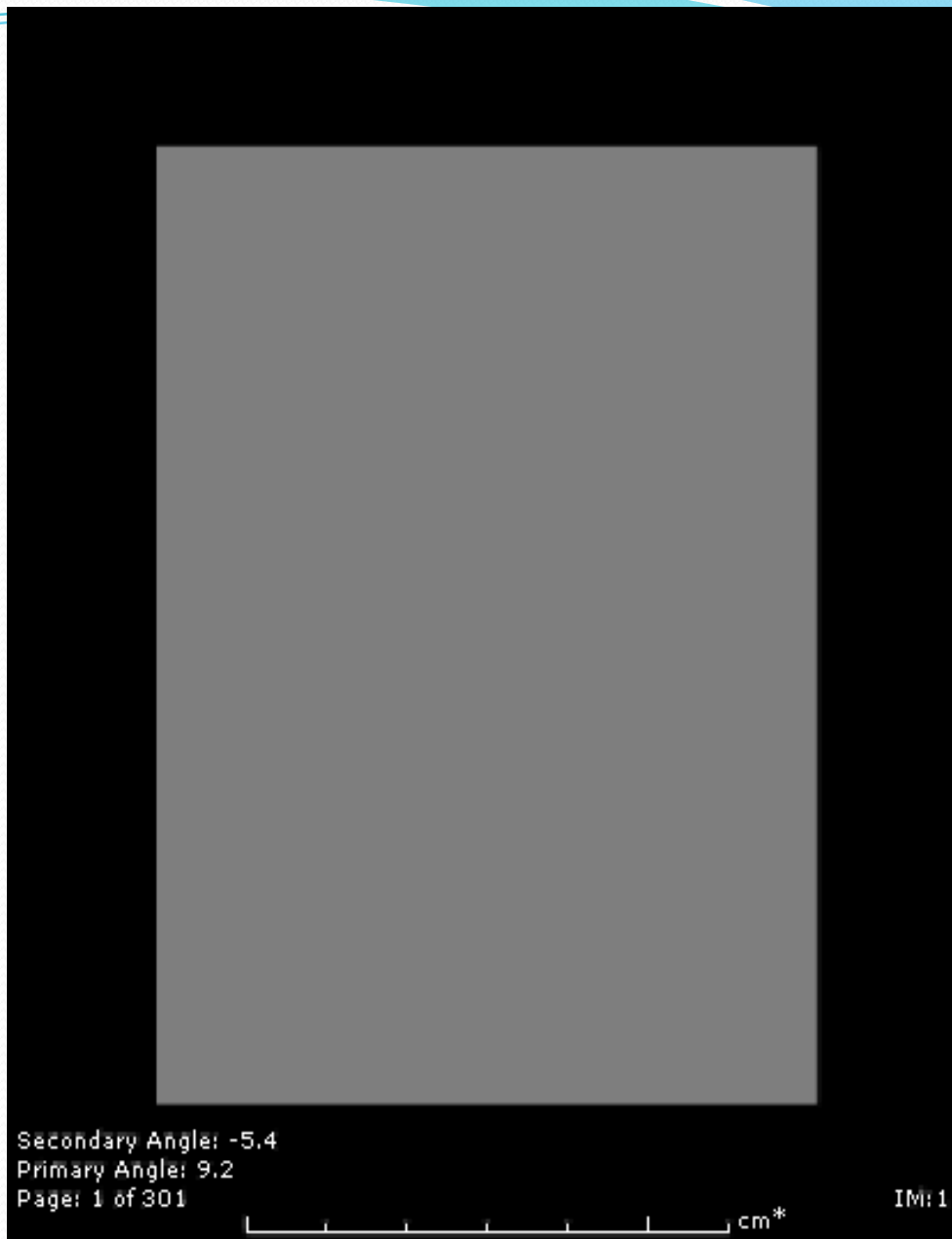




Secondary Angle: -5.4
Primary Angle: 9.2
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_____ cm*

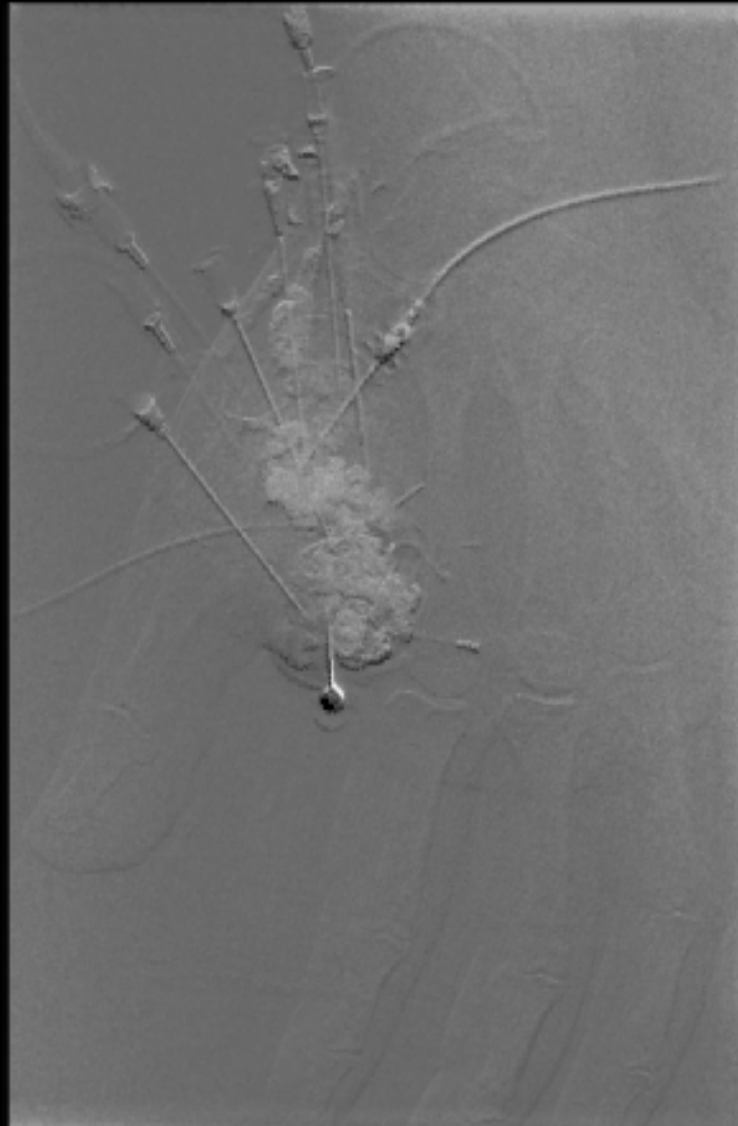
IM: 1



Secondary Angle: -5.4
Primary Angle: 9.2
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IM: 1



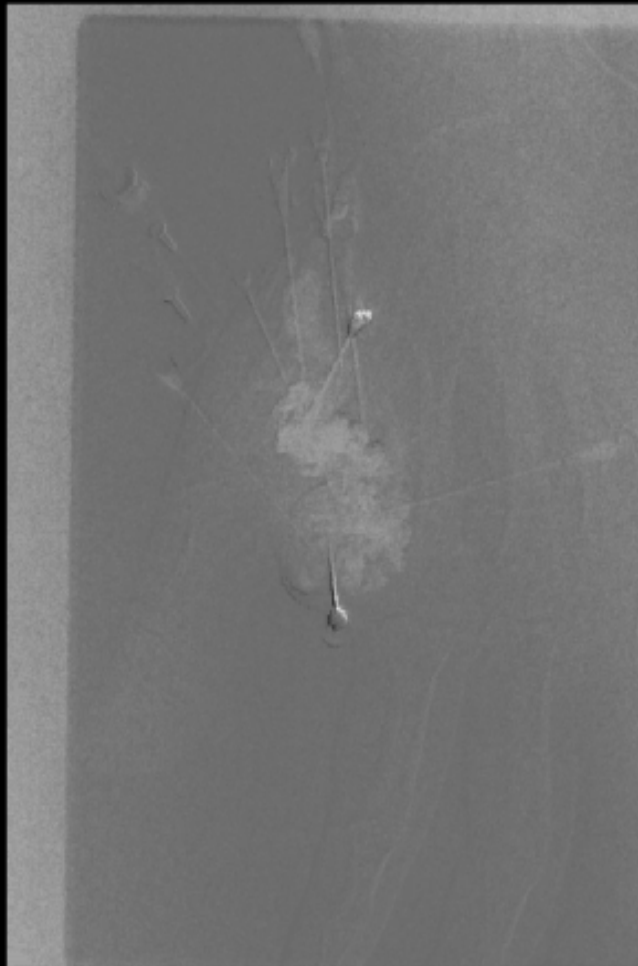
Secondary Angle: -5.4

Primary Angle: 9.2

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cm*

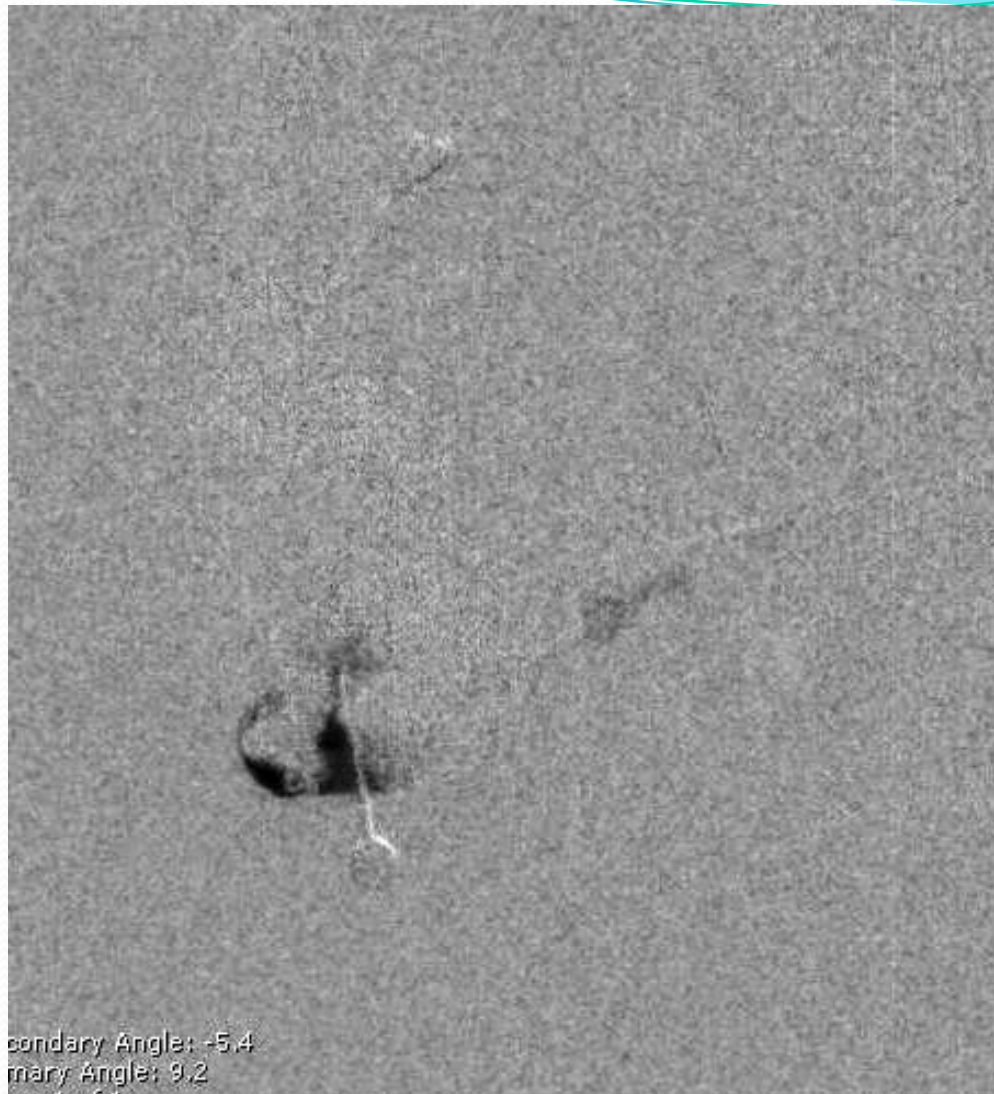
IM: 1



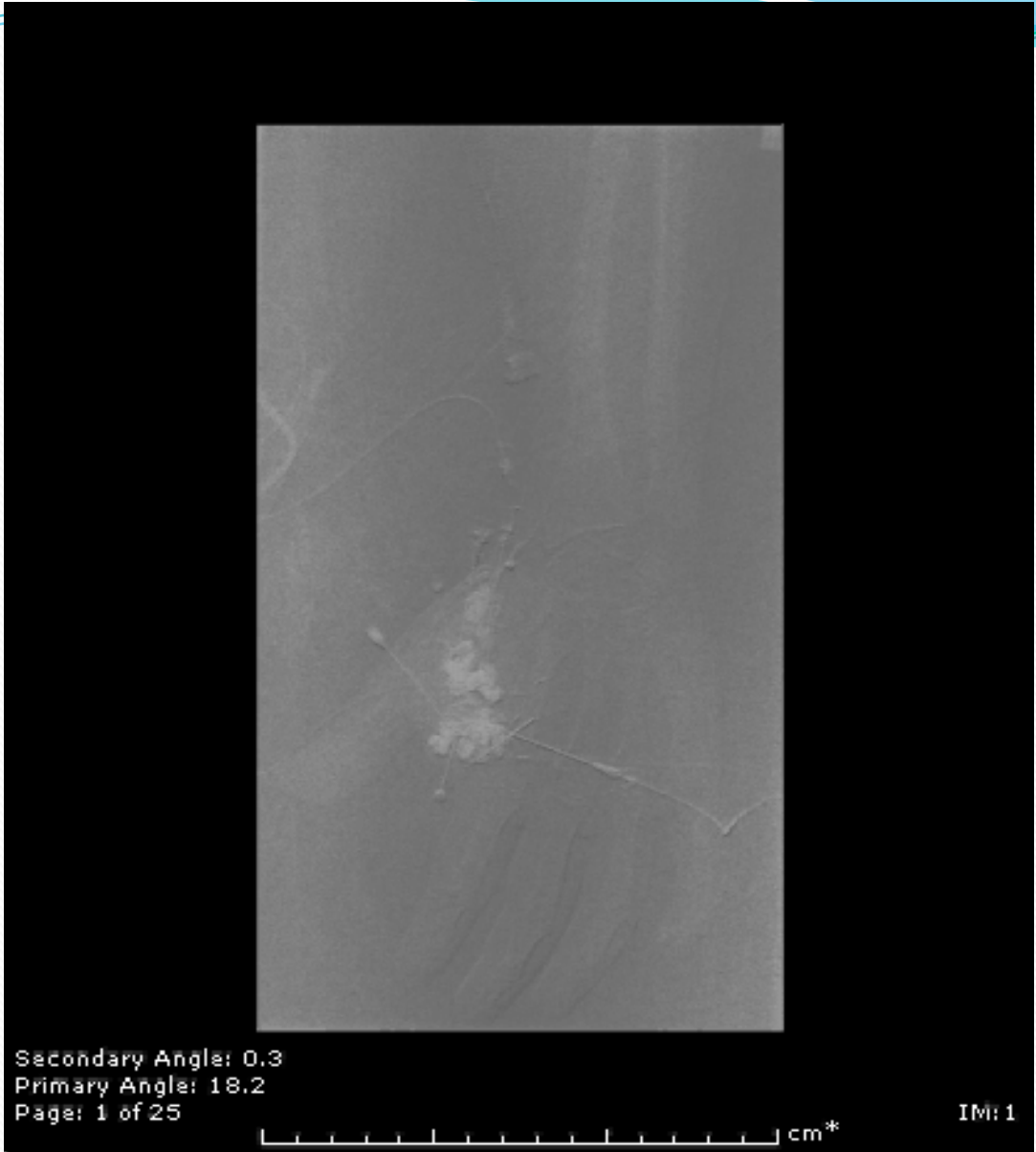
Secondary Angle: -5.4
Primary Angle: 9.2
Page: 1 of 23



IM: 1



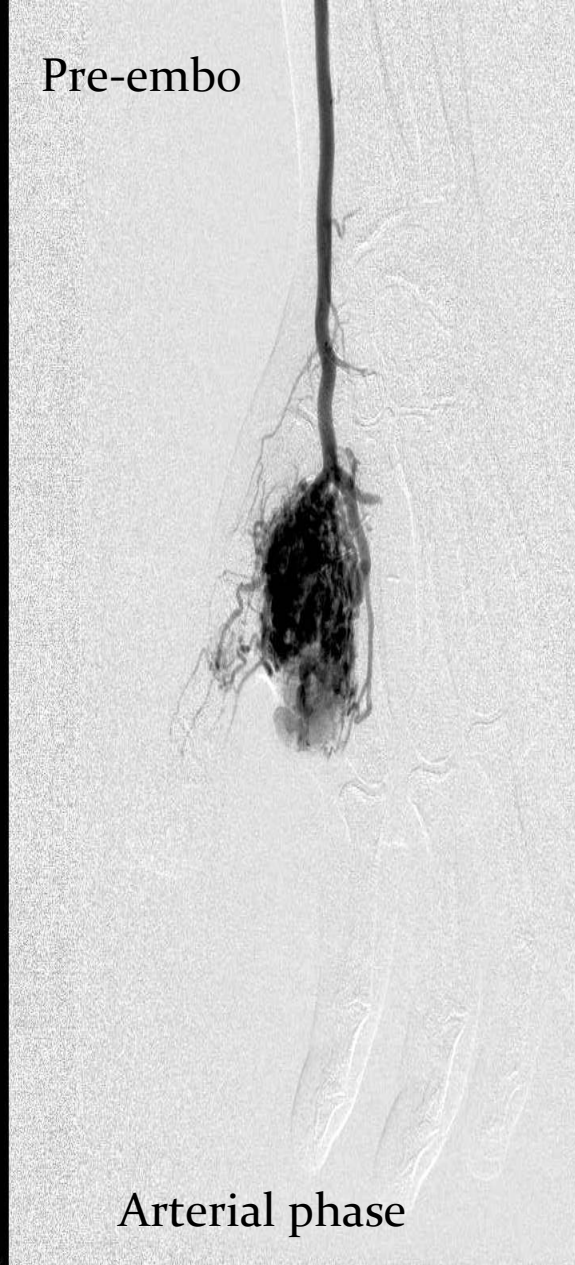
Secondary Angle: -5.4
Primary Angle: 9.2
Scale: 1:1



Pre-embo

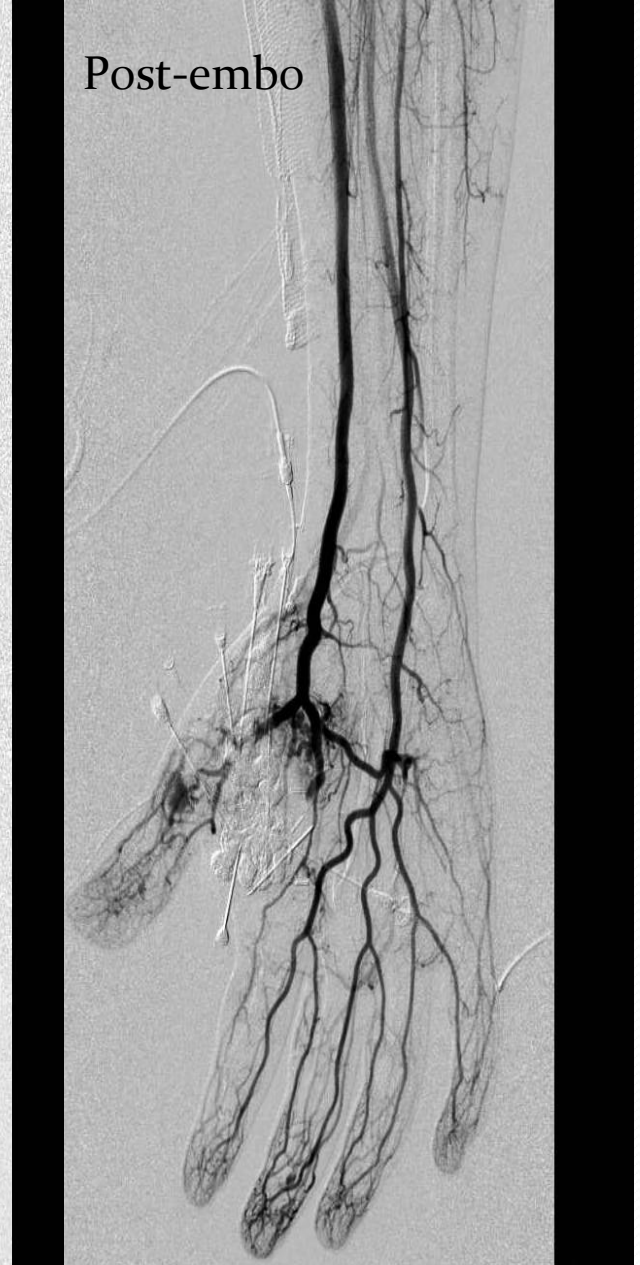


Pre-embo



Arterial phase

Post-embo



Pre-embo

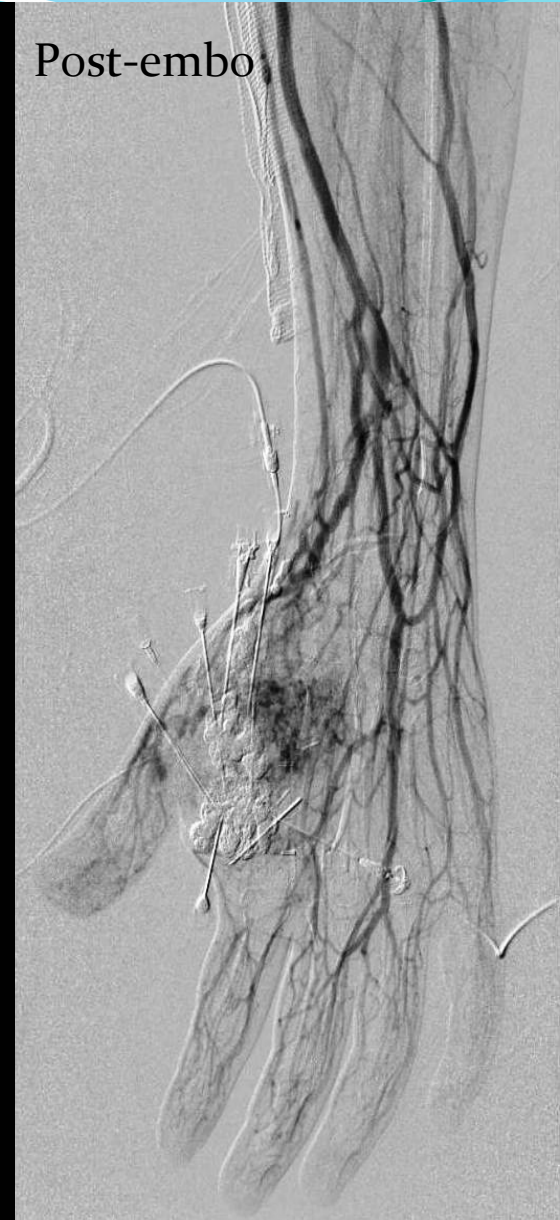


Pre-embo



Late arterial phase

Post-embo



FINDINGS

- Deep palmar arch, which provides blood to thumb & thenar side of index finger gives rise to collat. branches;
- Limited ultrasound images of the left hand, palmar and dorsal thenar aspects demonstrate abnormal echogenic tissue within the subcutaneous tissues compatible with history of prior surgery. A relatively well-defined conglomerate of dilated arteries and veins within the left thenar region is seen, compatible with the high flow vascular malformation.
- The angioarchitecture is composed of numerous small branches from the distal radial artery and radial side of the deep palmar arch. These include princeps pollicis, radialis indicis and numerous small muscular branches.
- The venous drainage is composed of immediate venous sacs within the thenar region with dominant drainage into the left cephalic vein. The prominent draining vein are seen on the angiographic images at the medial aspect of the base of the first metacarpal and at the lateral aspect the base of the first metacarpal.
- Multistage glue embolization of the high flow vascular Smalformation resulted in almost complete obliteration of the abnormal shunting with very small residual component (estimated to be less than 5%).
- No evidence of inadvertent embolization.

Take home message

- **Transvenous Approach First!**
 - The vein(s), rather than the arteries, blamed and treated