



Juxta-anastomotic Stenosis: Colour Duplex Imaging and Histology

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NHS Trust



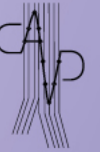


Disclosure

Speaker name: Kate Steiner

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- I have the following potential conflicts of interest to report:
- Consulting
- Employment in industry
- Shareholder in a healthcare company
- Owner of a healthcare company
- Other(s)
- I do not have any potential conflict of interest



Juxta-anastomotic stenoses

- U/S imaging and assessment
 - Significant stenosis
 - Volume flow
 - Stenosis morphology and assessment of IMT
- Histology assessment
 - Correlation with U/S



U/S assessment

- Volume flow (Brachial artery)
- Measurement of vessel diameter/diameter reduction
- PSV across JA segment
- Measurement of IMT (near wall and far wall), luminal diameter, vein diameter
- Correlate with clinical indicators of dialysis fistula dysfunction



U/S assessment

- Retrospective analysis 150 Doppler U/S studies
- Clinical indicators of dialysis fistula dysfunction
- Majority of stenosis juxta anastomotic (51%) or within the proximal draining vein (59%)

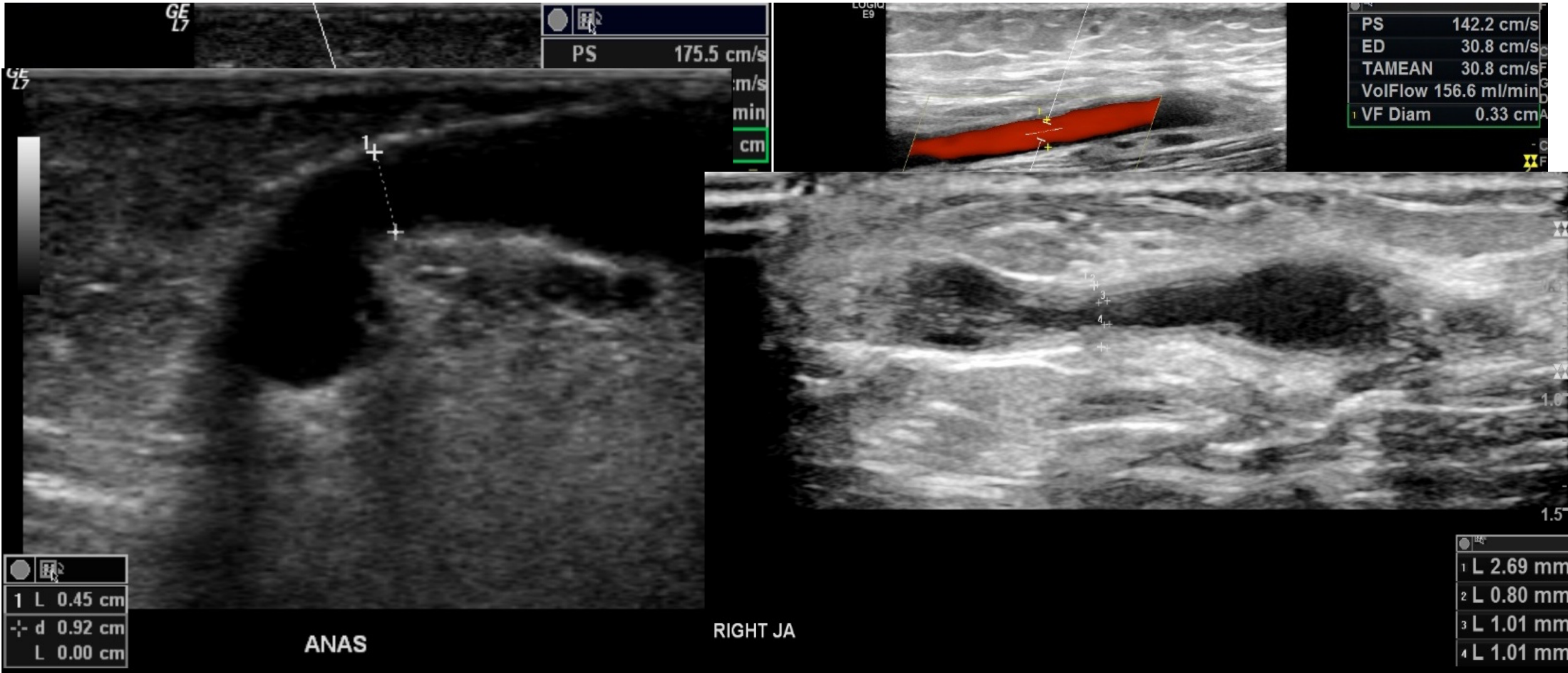
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U/S assessment

- Volume flow in the brachial artery negatively correlates with both the reduction in perianastomotic diameter and increased intimal thickness (linear regression $P = .02$) and positively correlates with increased diameter of the perianastomotic vein (linear regression $P < .0001$)
- Volume flow in the brachial artery was the tested variable that correlated best with good/normal fistula function ($P < .0025$)
- PSV across the PAV do not correlate with fistula dysfunction or a significant stenosis



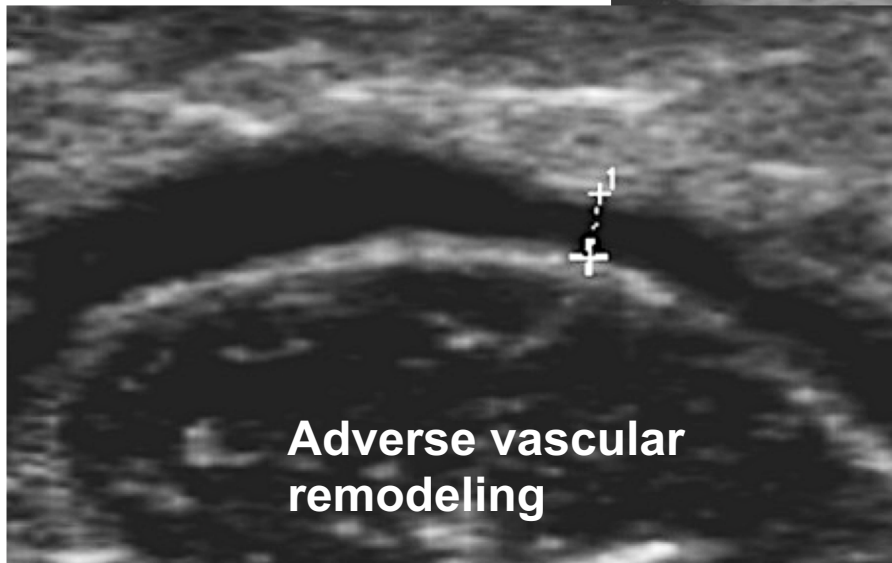


U/S assessment

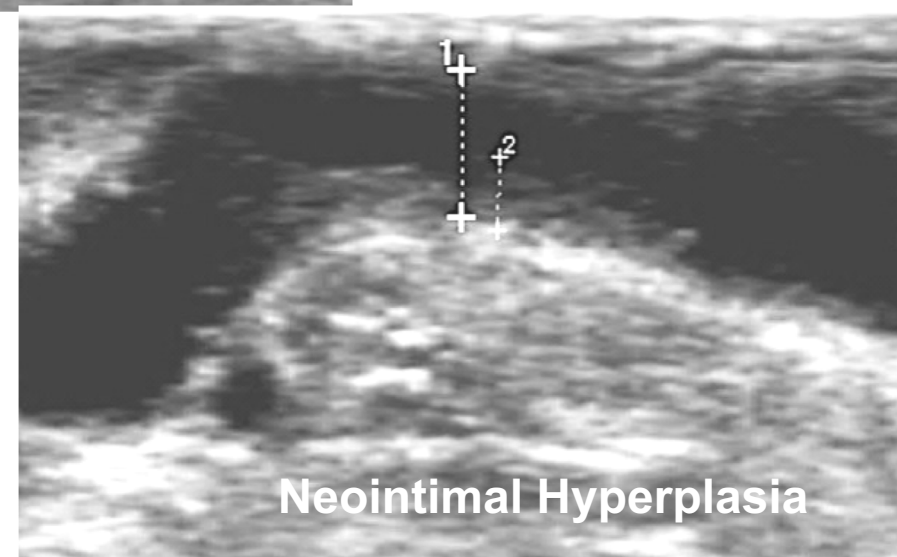
- Measurements of intimal thickness and diameter of the perianastomotic vein demonstrate that the B-mode appearances of a perianastomotic stenosis were not uniform



Normal
Anastomosis

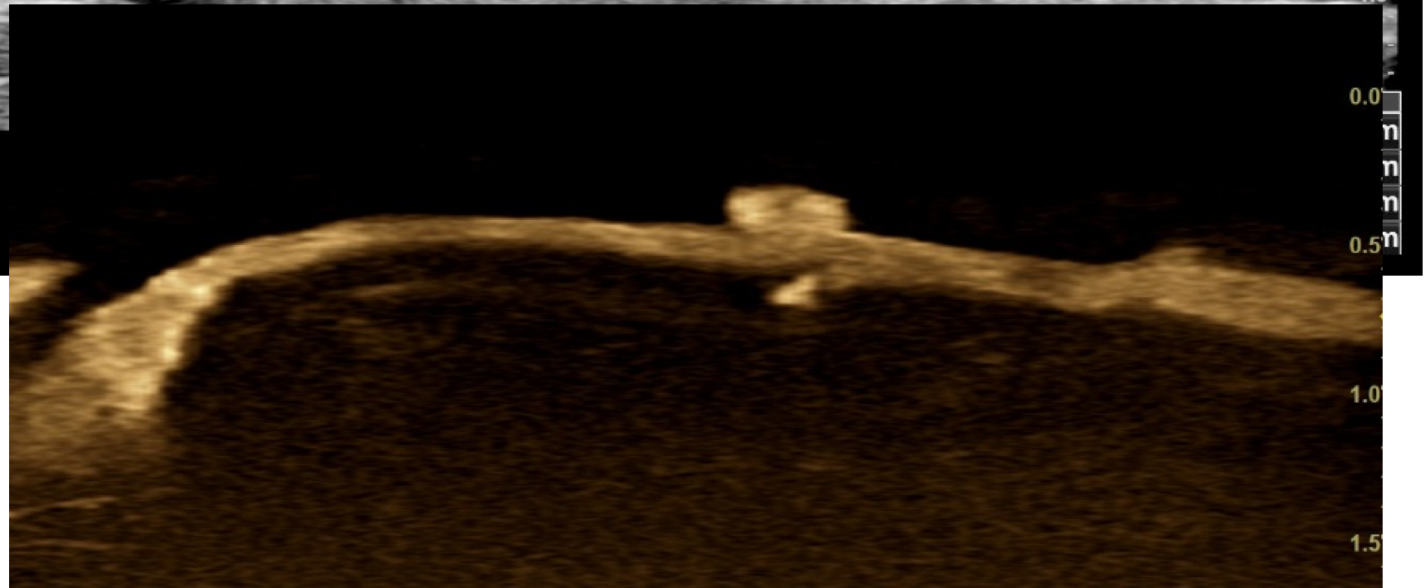
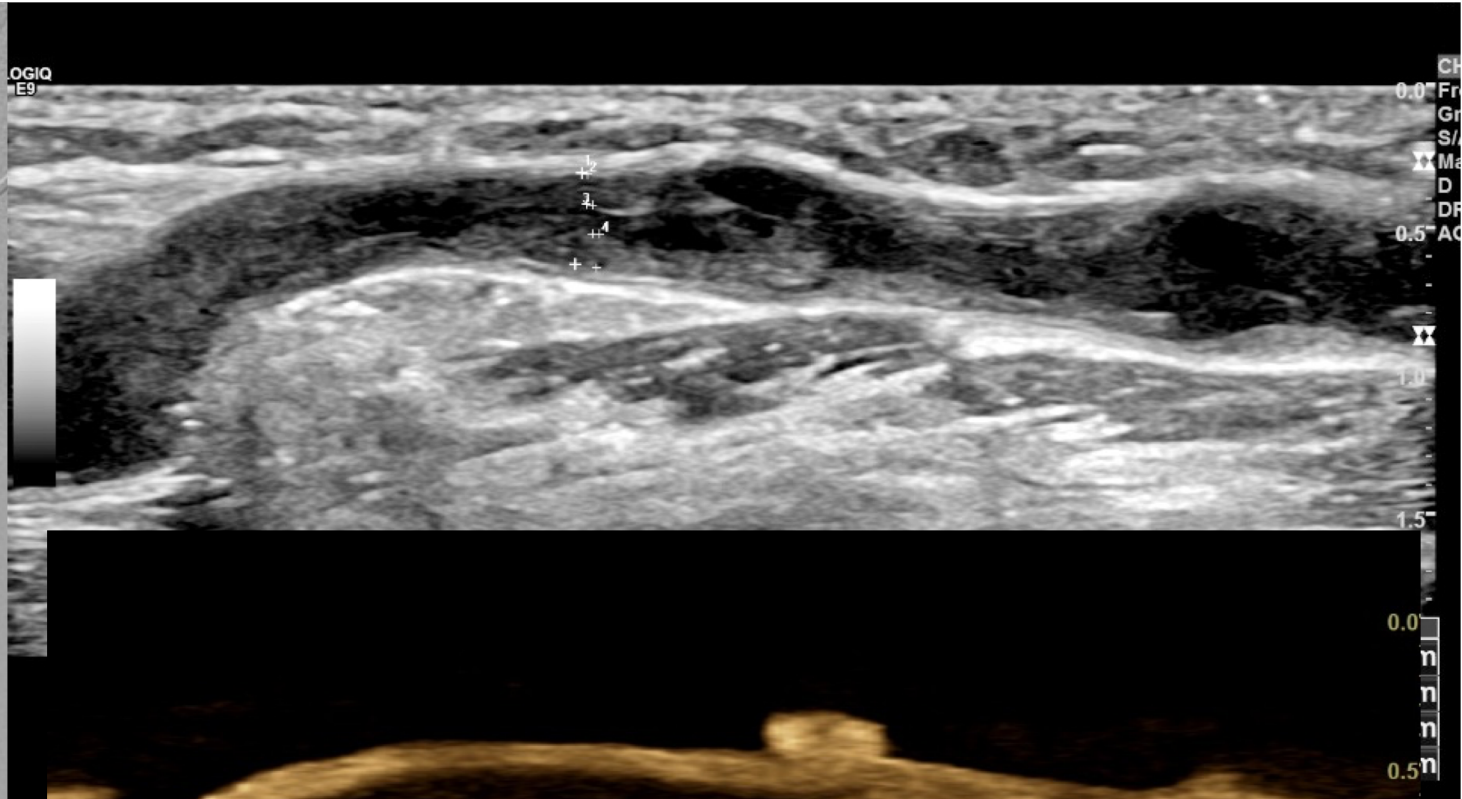


Adverse vascular
remodeling

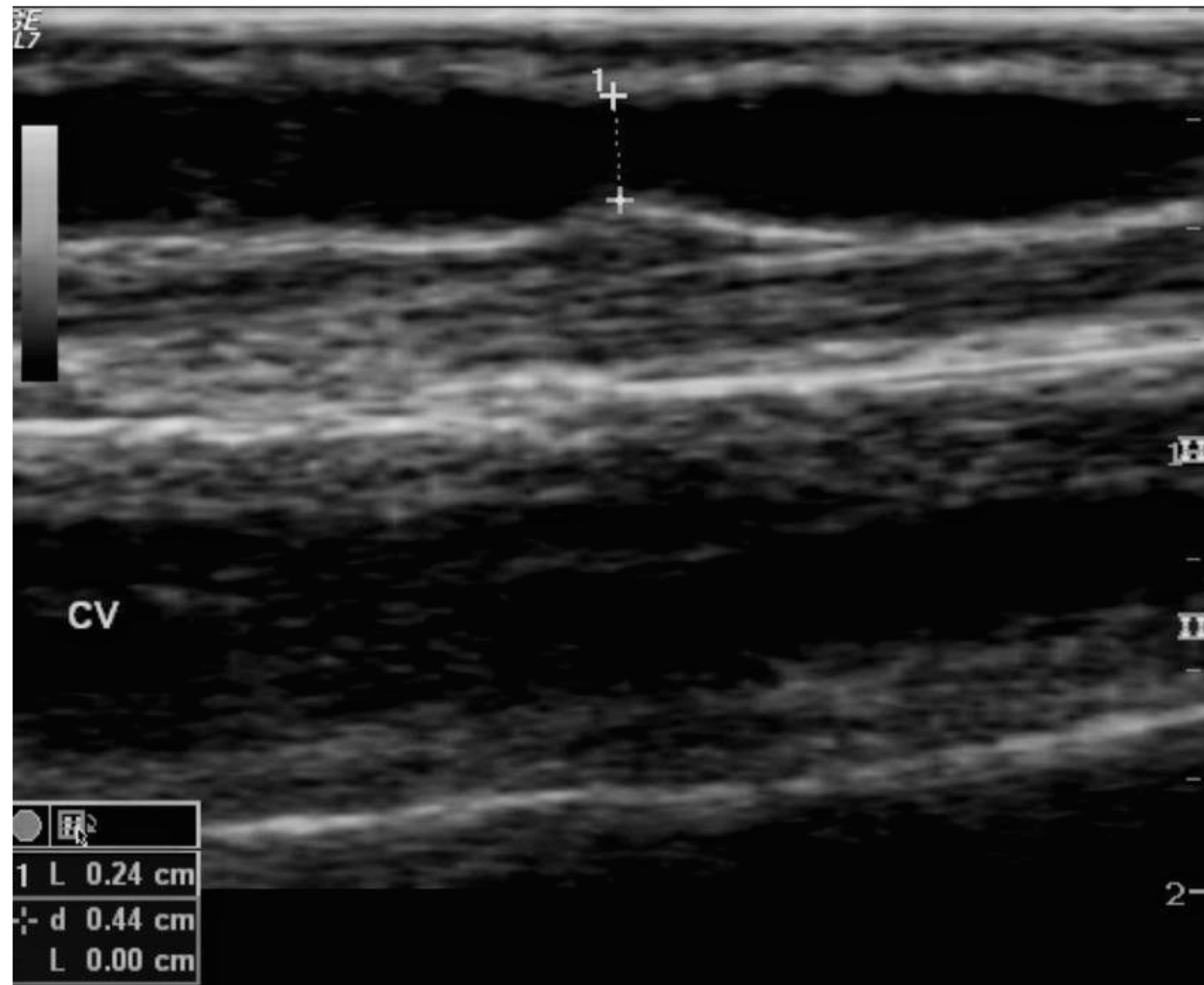
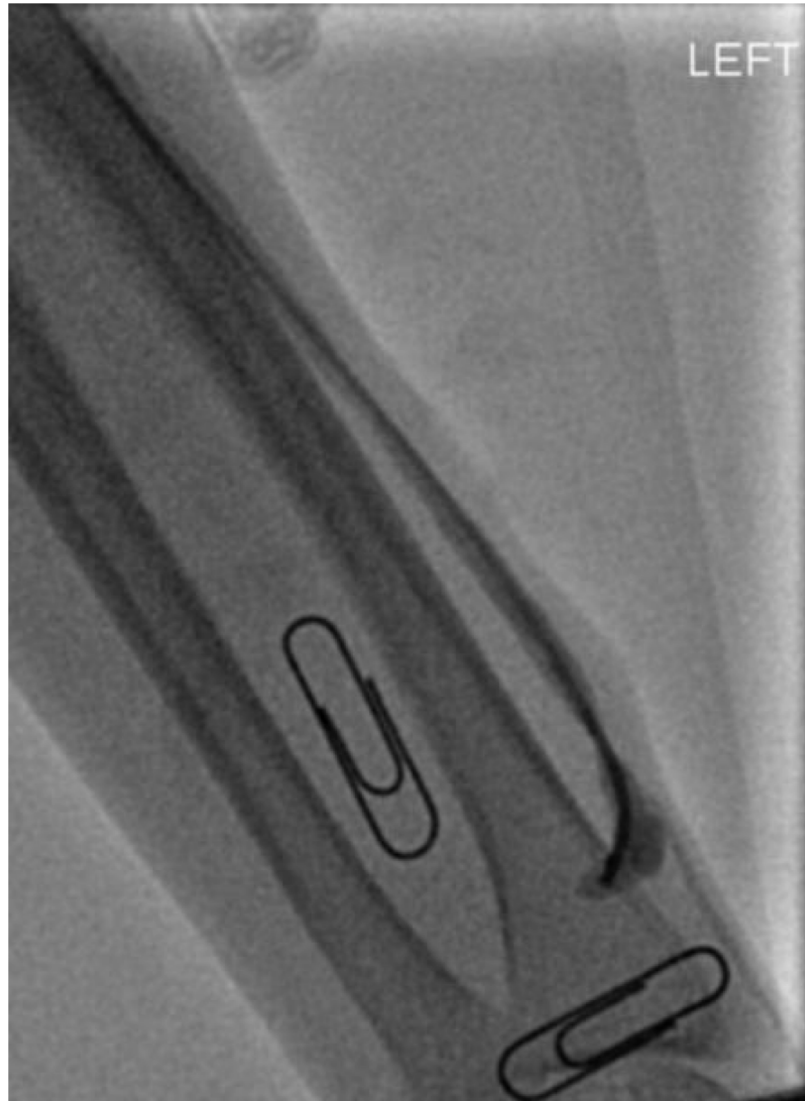


Neointimal Hyperplasia

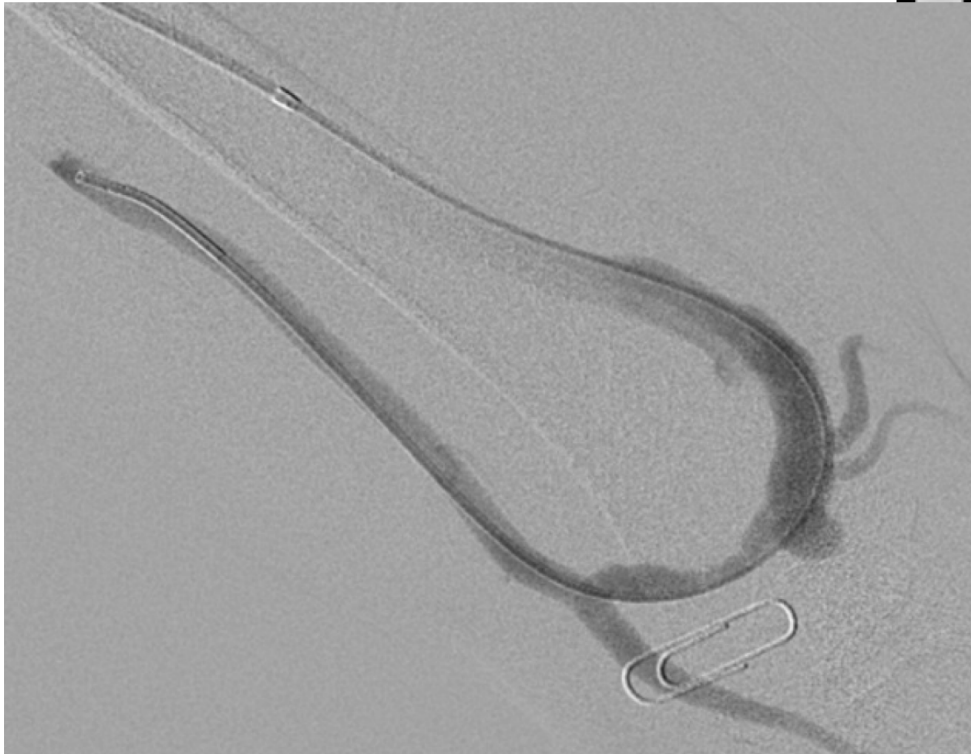
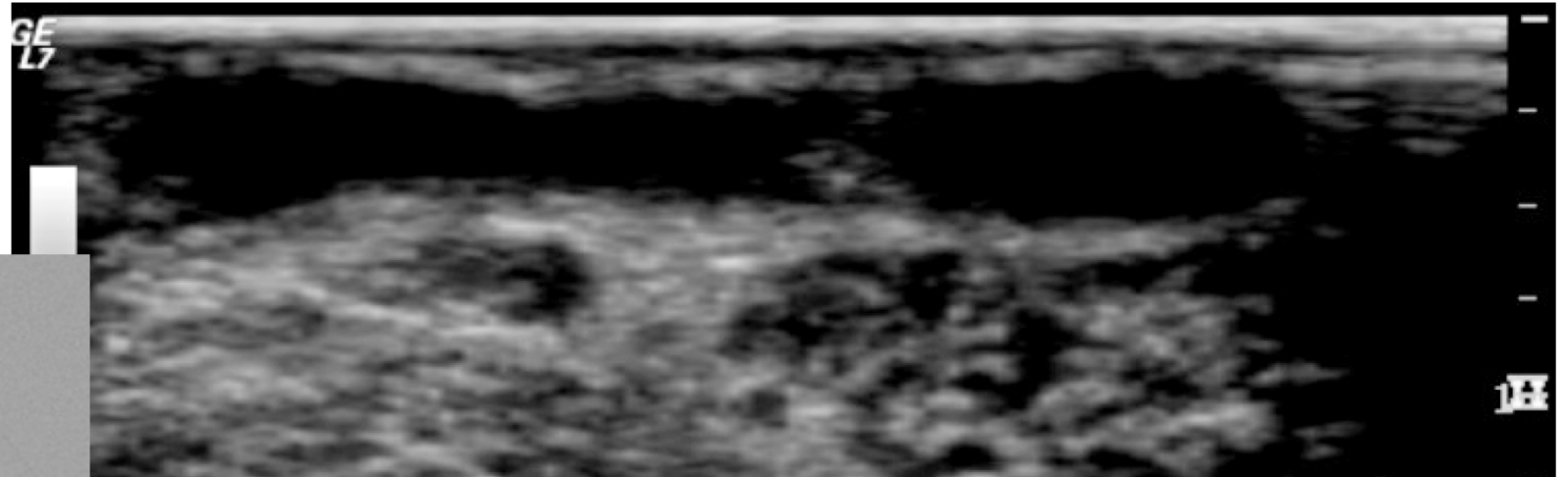
Case 1



Case 2

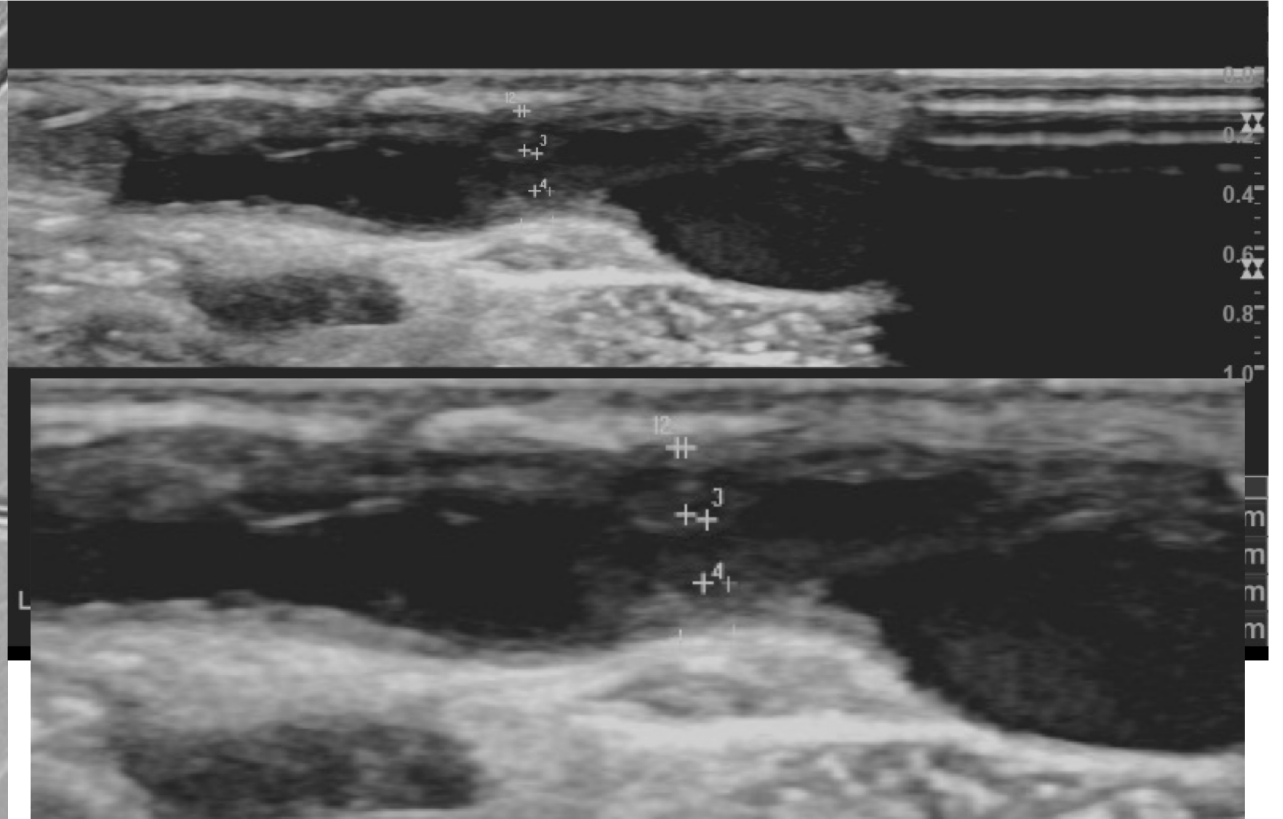
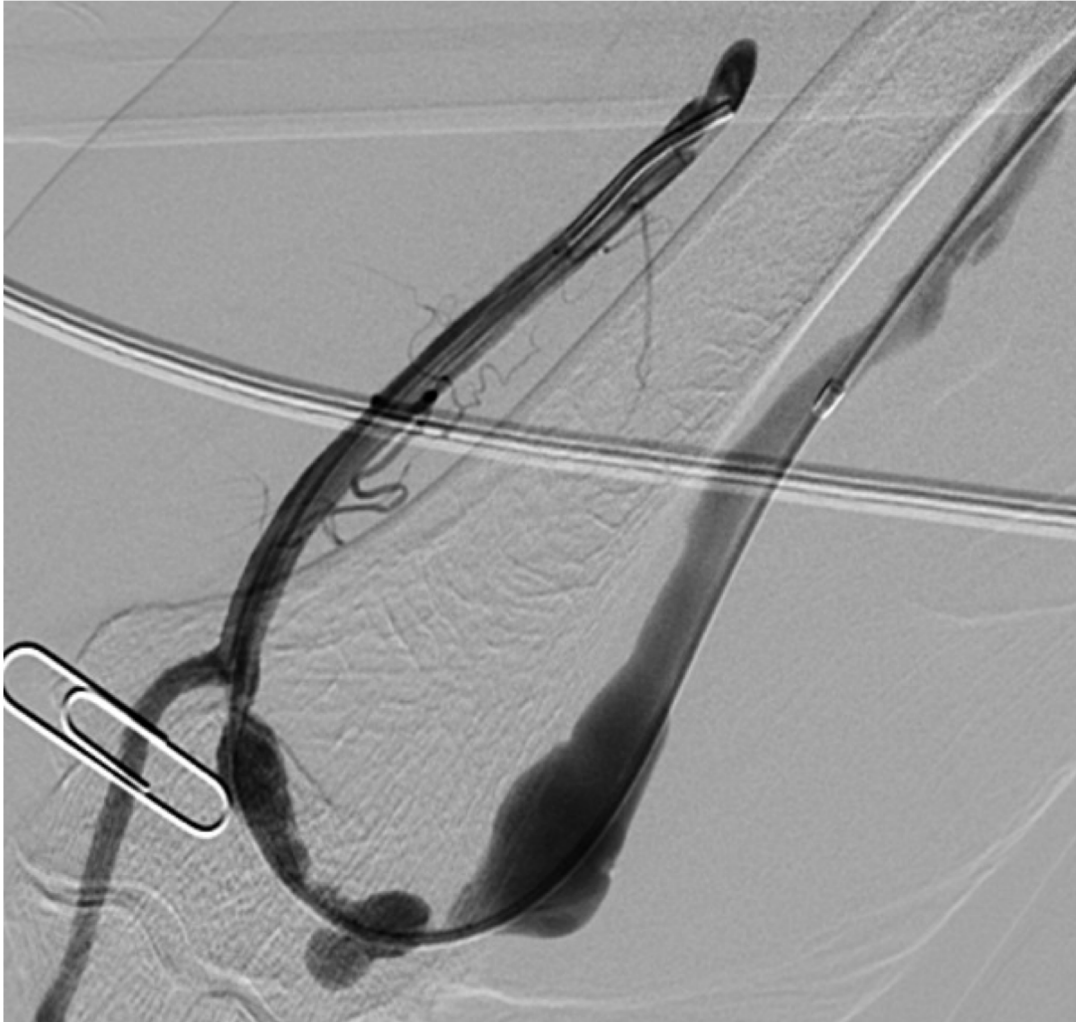


Case 3



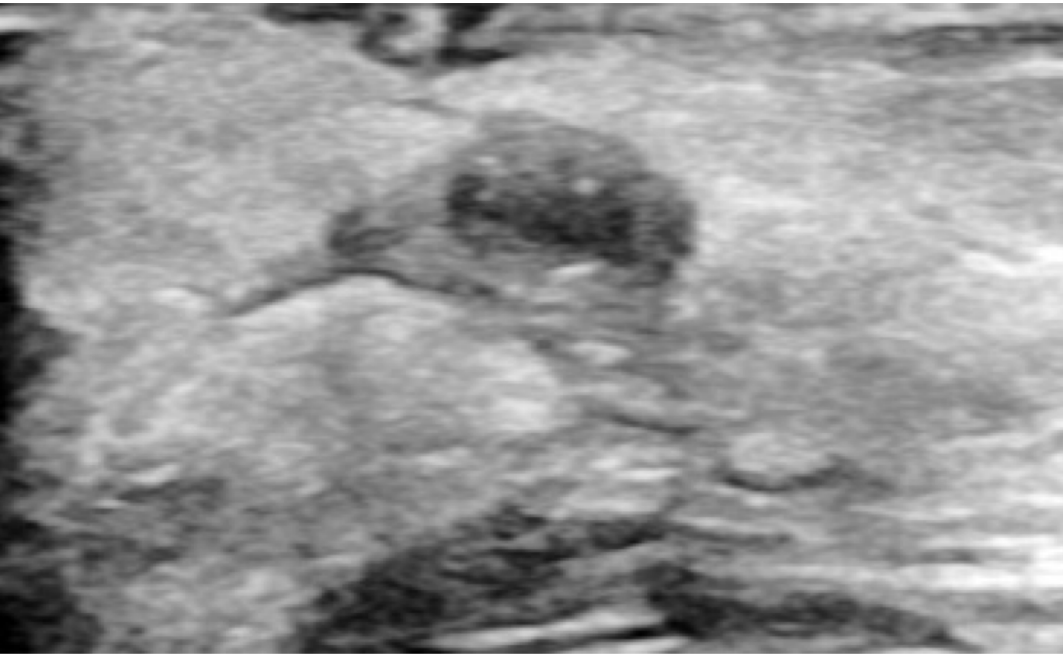
2014

Case 3

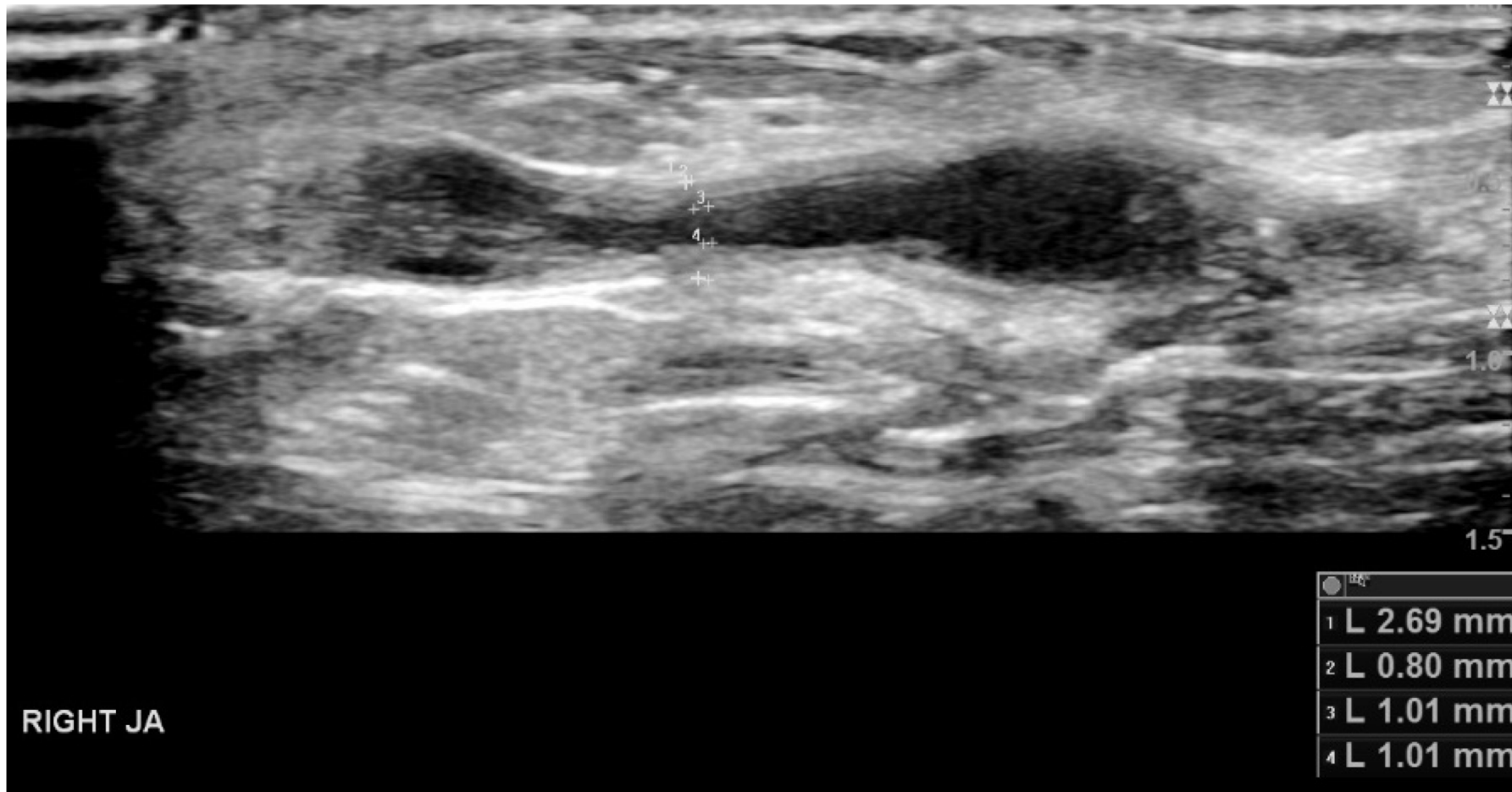


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Case 4

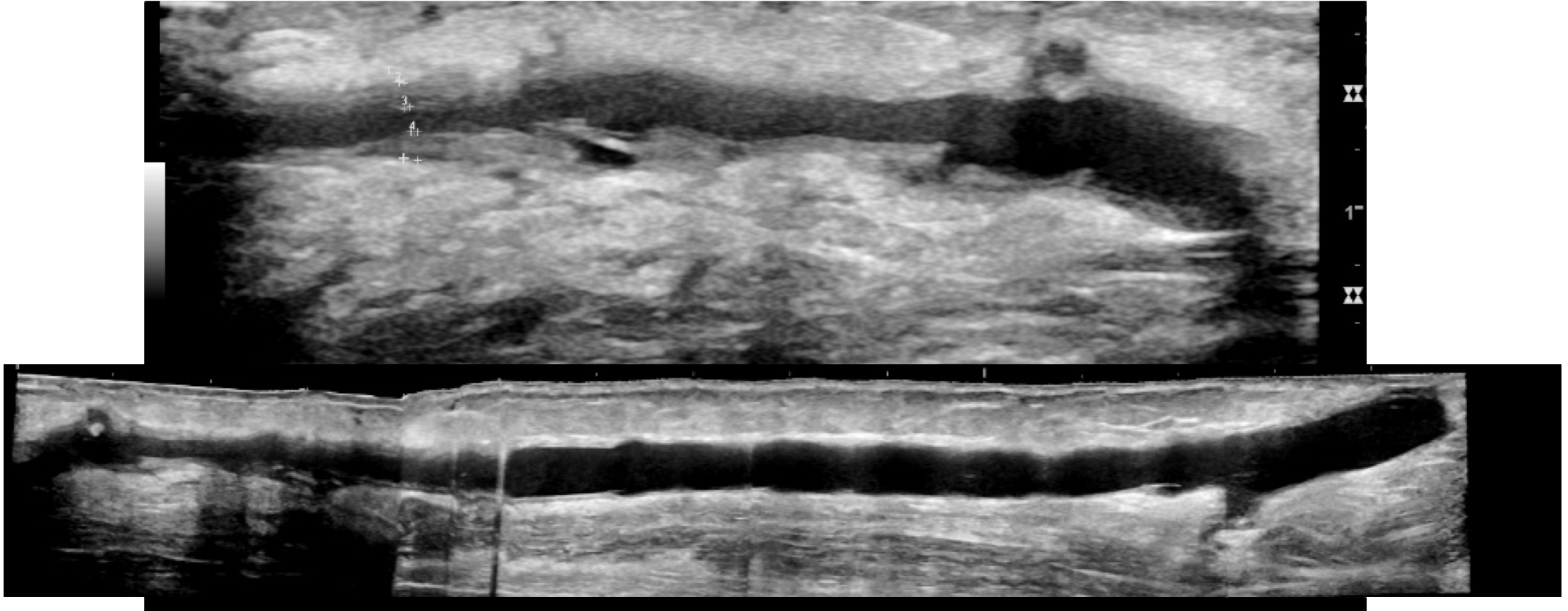


Case 4



6 weeks after PTA

Case 4

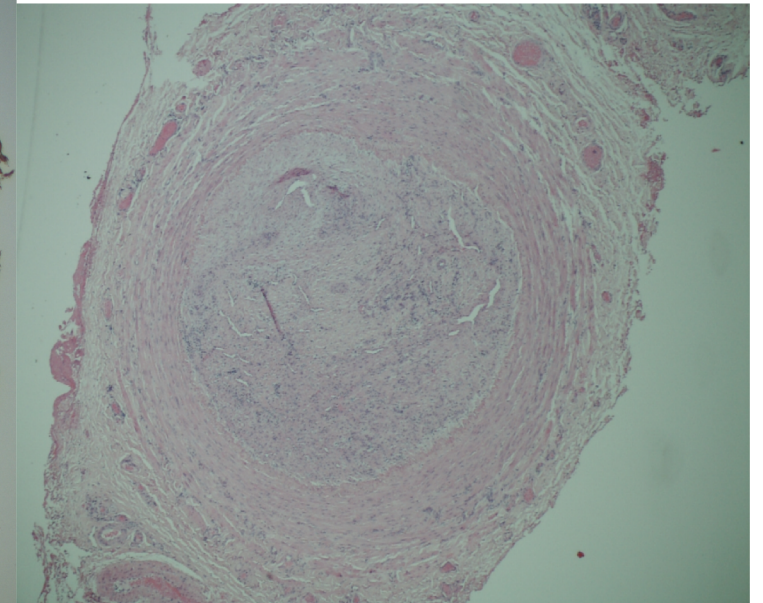
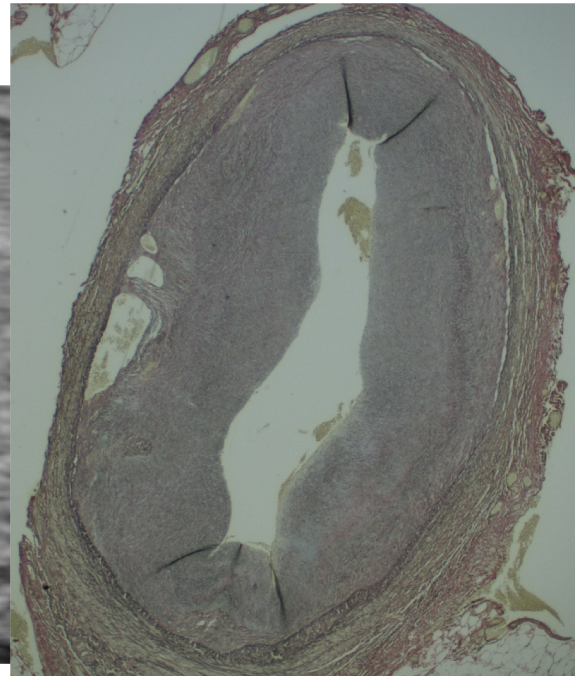
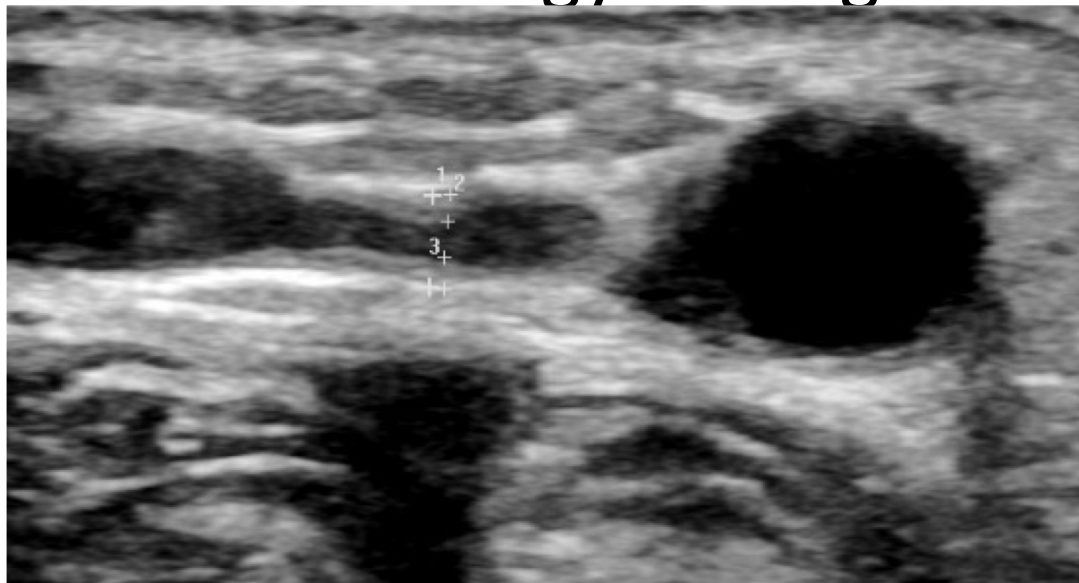


Post proximalisation



Histology Correlation with U/S

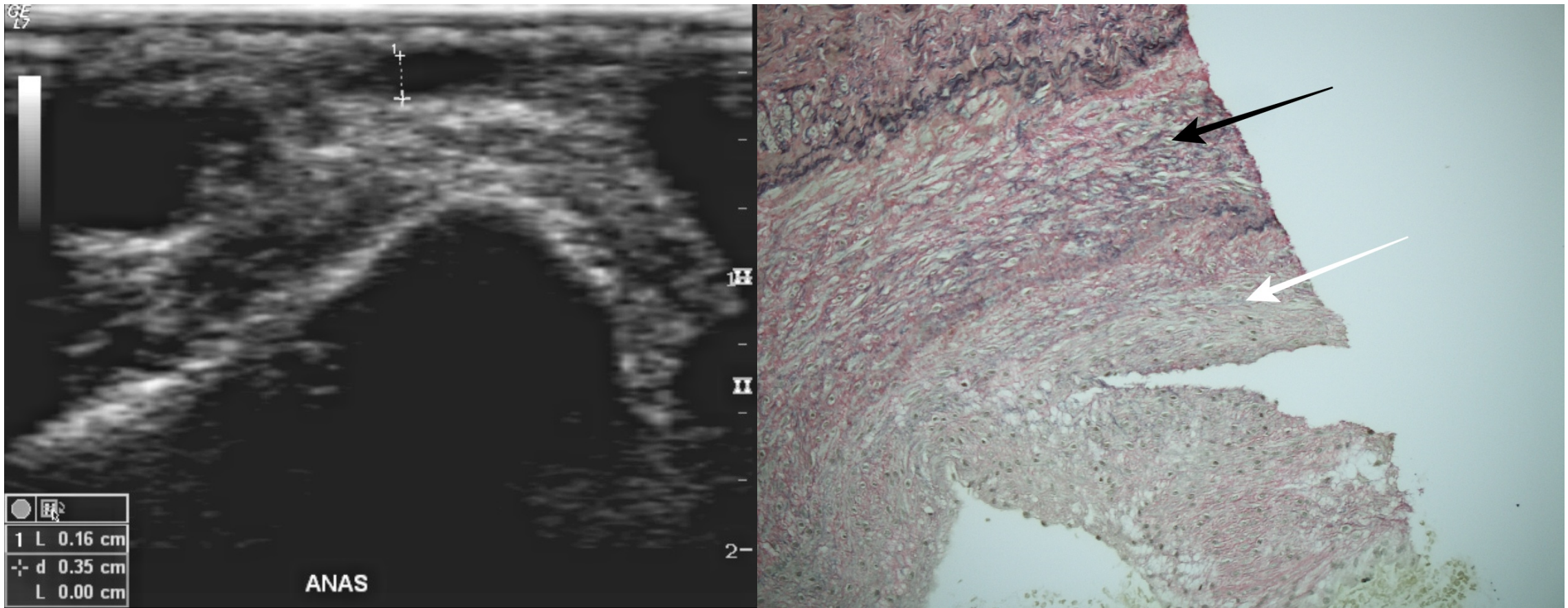
- IH seen on U/S confirmed on histology
- Different types of AV access stenosis correlation between U/S and histology findings



Right RCF juxta-anastomotic stenosis; B mode U/S demonstrating intimal hyperplasia. Histology specimen EVG stain demonstrating intimal hyperplasia



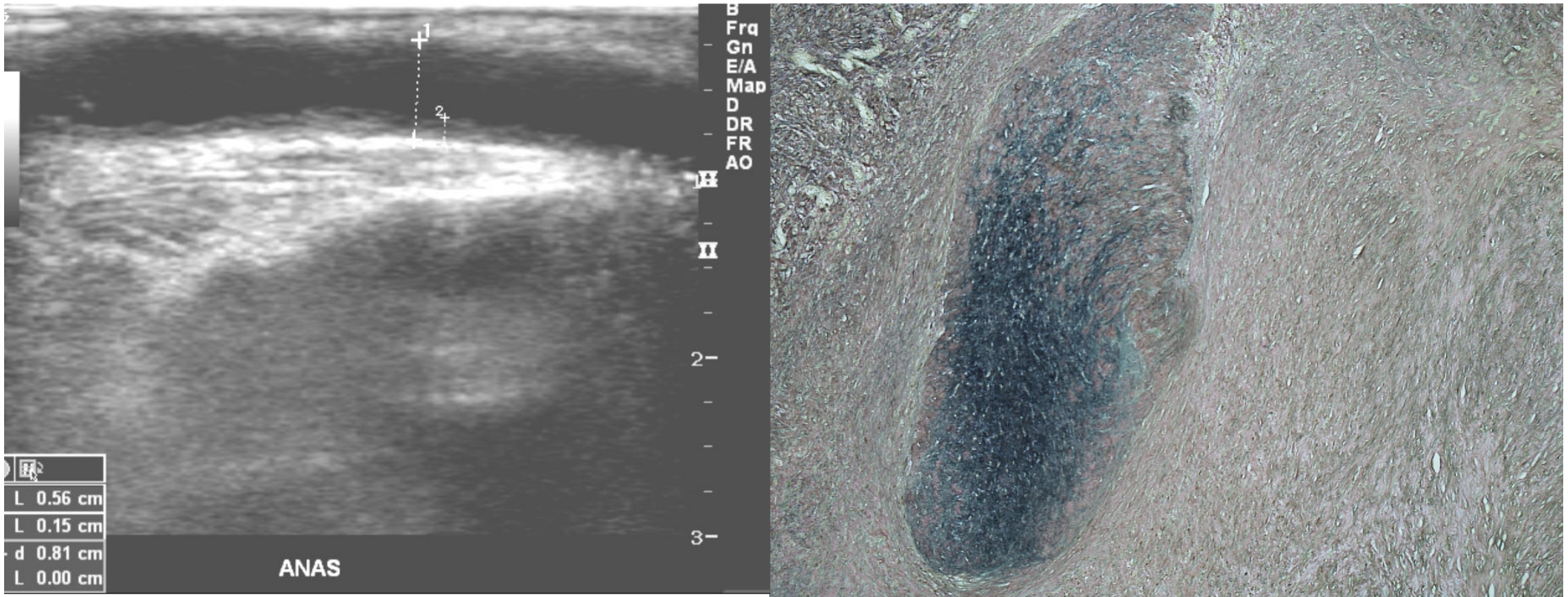
Histology assessment AV access stenoses



Left RCF juxta-anastomotic vein; B-mode U/S no measurable intimal hyperplasia, histology H&E stain medial thickening.



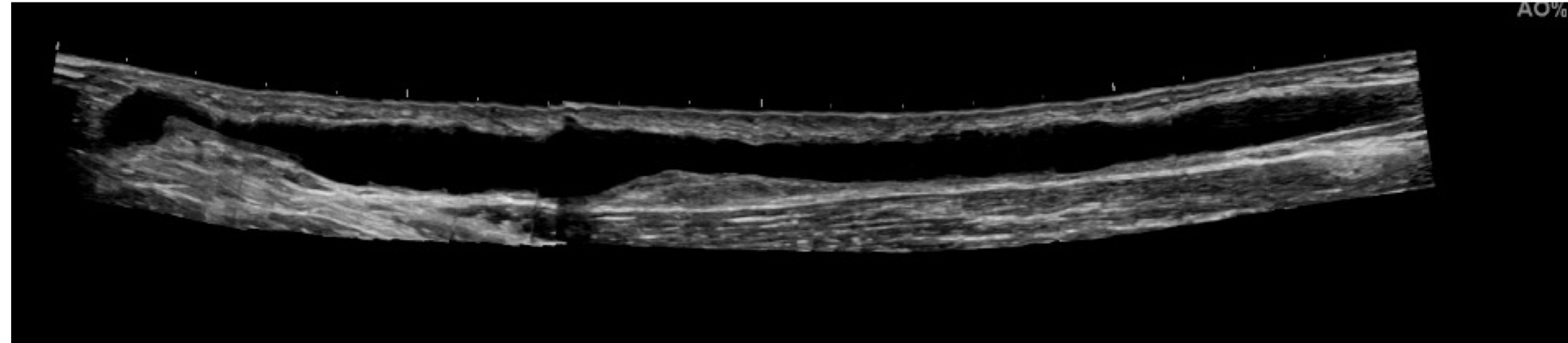
Histology assessment AV access stenoses post PTA



Right RCF B-mode U/S pre PTA demonstrating neo-intimal hyperplasia. Histology recurrent stenosis 306 days post PTA EVG stain demonstrating marked neointimal proliferation with fibrosis.



- JA stenosis
 - Measure VF
 - Luminal diameter
 - Clinical correlation
 - Not a uniform group (?implication for treatment and restenosis)
 - Neo-intimal hyperplasia
 - Adverse adventitial remodeling/failure of vein dilation
 - Mixed
 - Fibrosis
- Histopathology correlation with Ultrasound



Thank you