

Stroke in a Young Woman

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Case History

- 42 year old right handed woman
- Awakened with sensation that “left arm fell asleep”
- Left arm and hand weakness – unable to grip items or make a fist
- PMH:
 - Hypertension
 - Tobacco Use (3-4 packs/week x 20 yrs)
- Medications: Labetolol 100 mg po bid

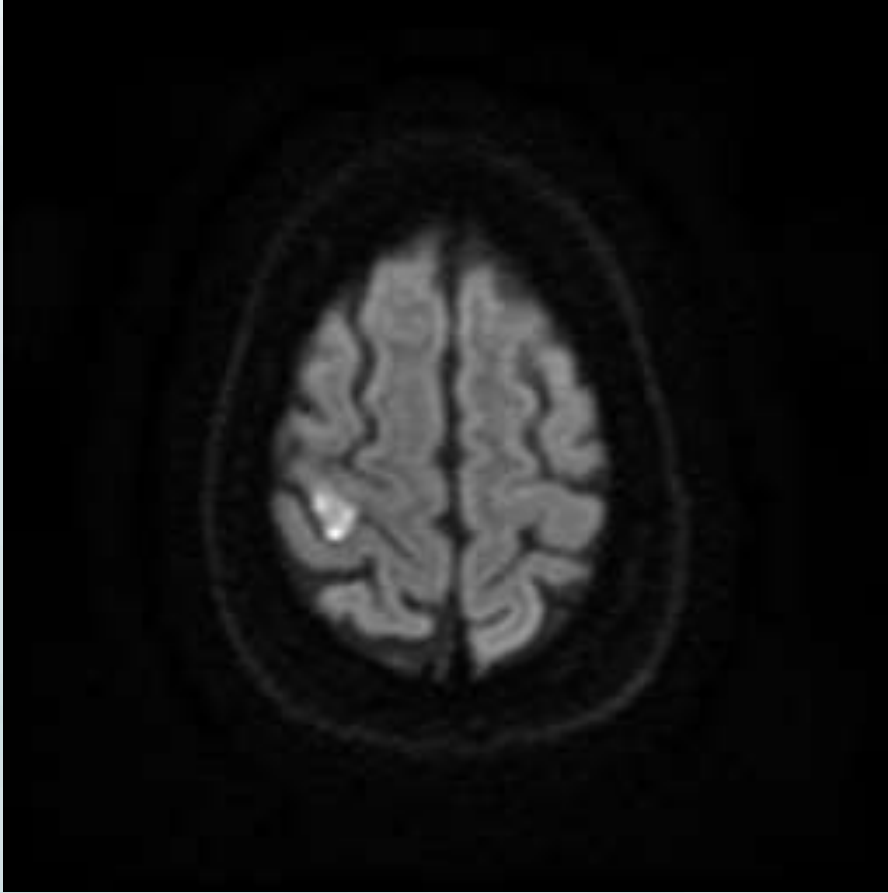
Case History

- Physical examination:
 - BP 155/92 P 86
 - No carotid bruits, + abdominal and femoral bruits
 - Muscle strength
 - Wrist flexor and extensor 0/5
 - Grip 0/5
 - Finger abductor 0/5
- Laboratory studies:
 - Total chol 245, LDL 177, HDL 48

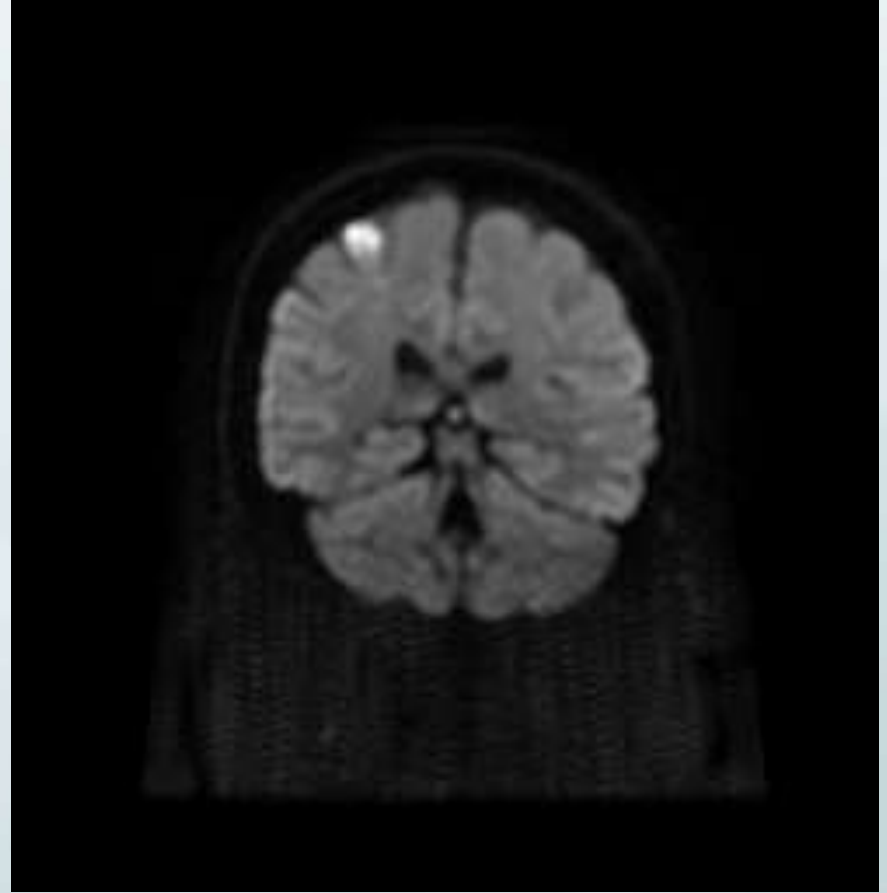
Case History

- Admitted to Neurology service
- Outside time window for rTPA
- Started on:
 - ASA 81 mg qd
 - Atorvastatin 40 mg qd
 - Labetolol 100 mg bid
- Echocardiogram – no significant abnormalities
- MR of the brain and MRA obtained

MR of the Brain



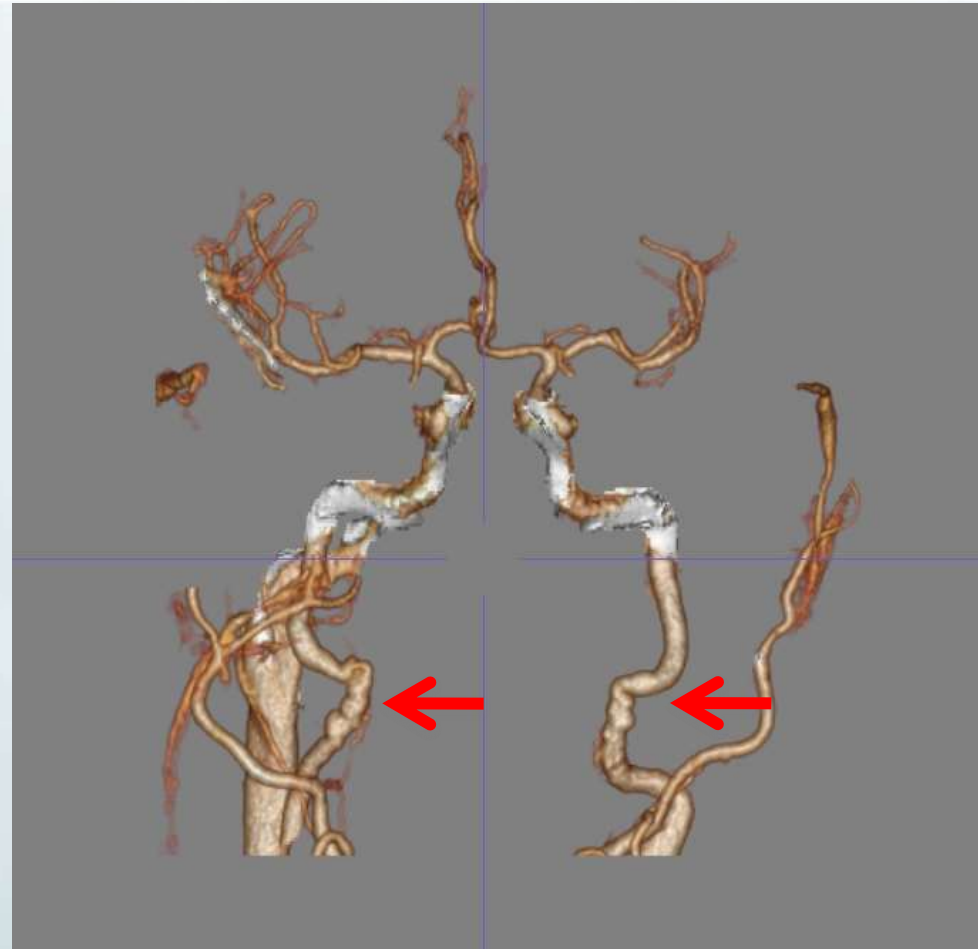
Axial DWI



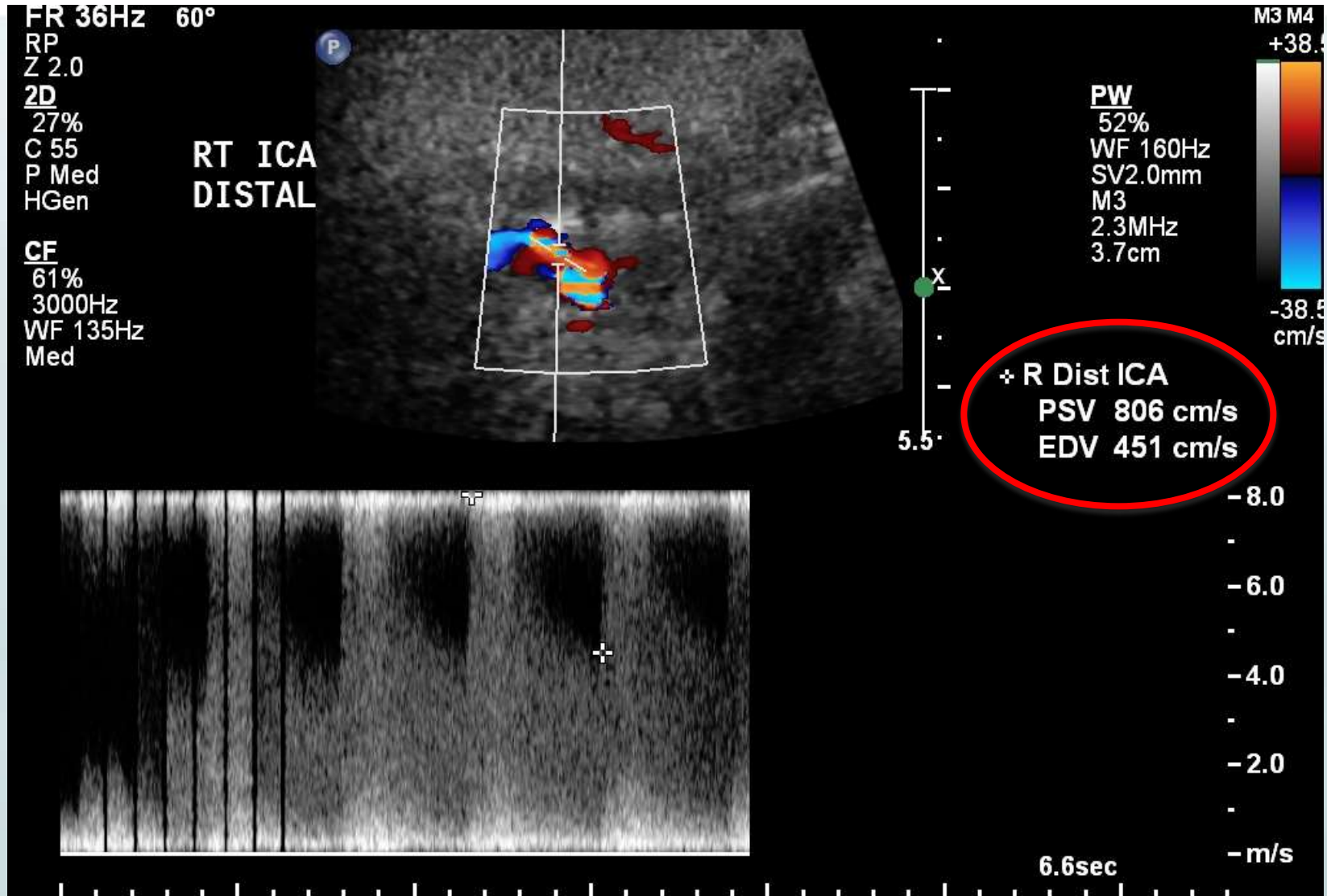
Coronal DWI

Case History

- Some improvement in left hand function
- No new neuro deficits on ASA
- Treated with permissive HTN
- CTA of head and neck vessels ordered



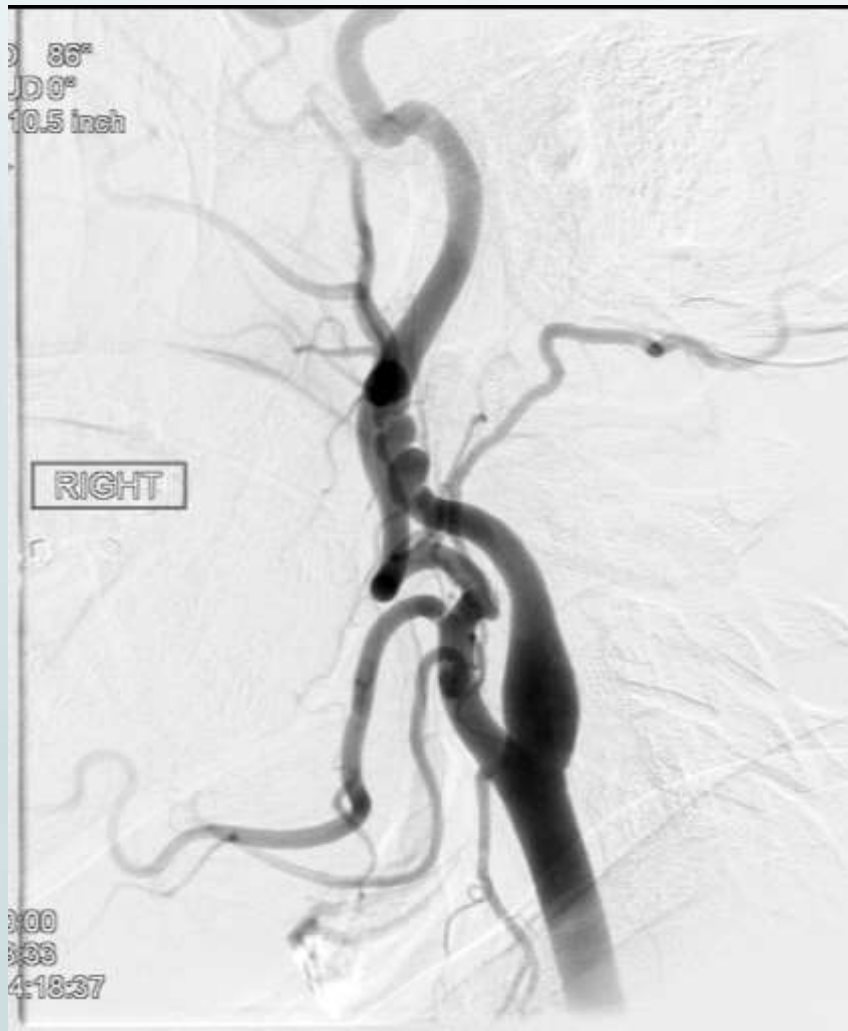
Carotid Duplex



Angiography



Carotid Angiography

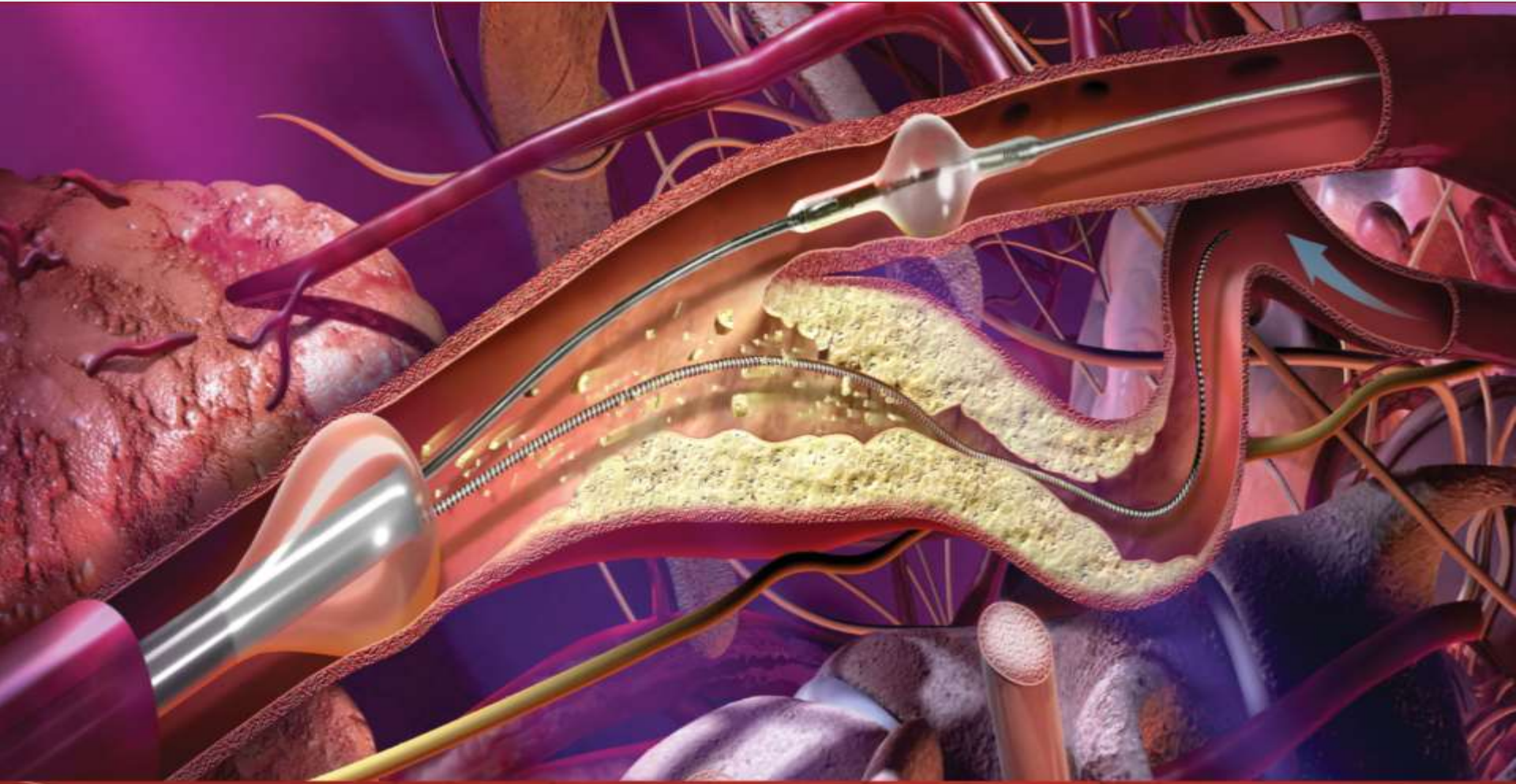




Procedural Approach

- Plavix 600 mg load
- PreClose Technique – ProGlide device
- 9 Fr Terumo Long sheath
- Heparin to keep ACT > 250 sec
- MoMa Proximal embolic protection system
- Balloon angioplasty

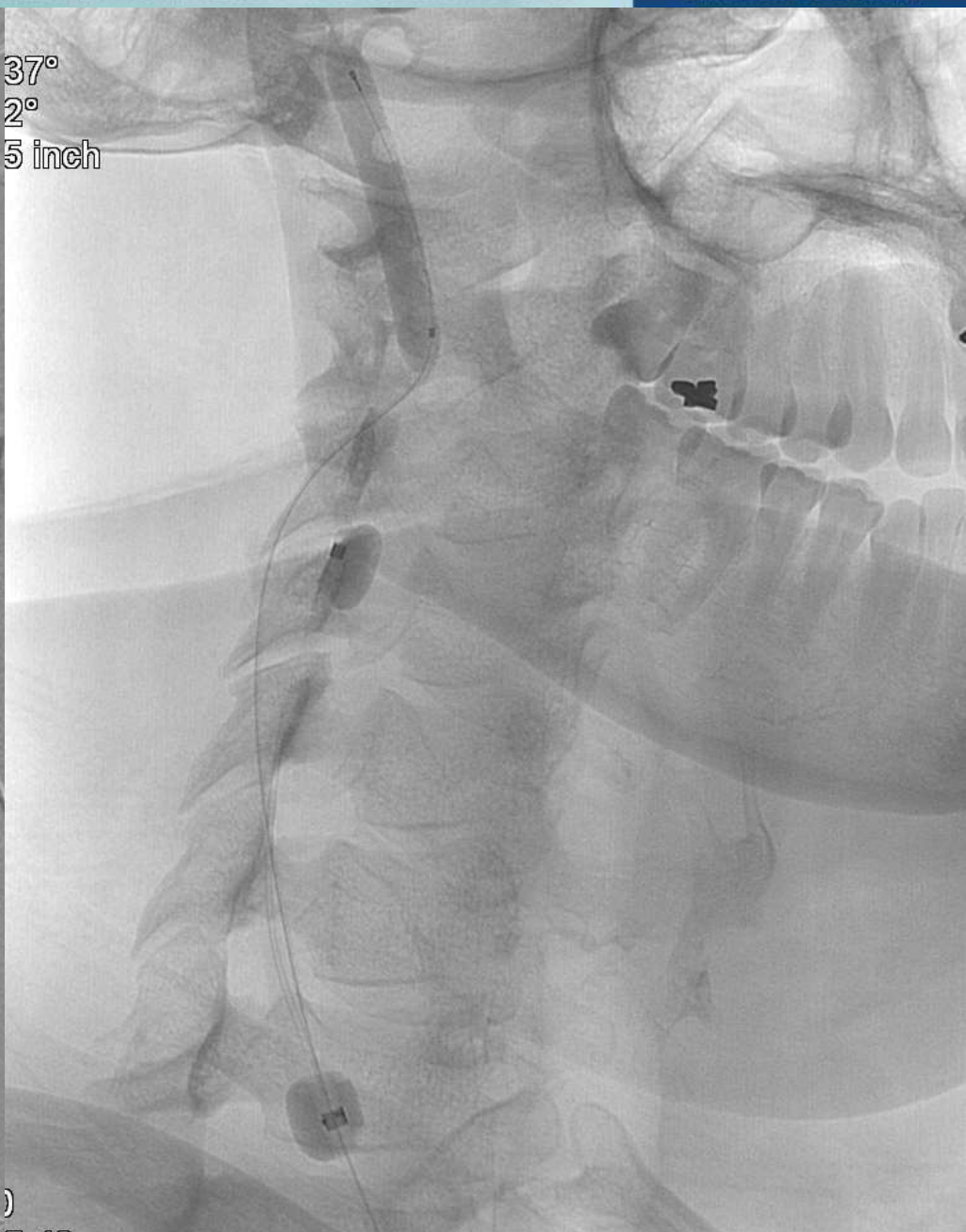
Proximal Embolic Protection



RAO 37°
CAUD 2°
FD 10.5 inch



37°
2°
5 inch



9:87
0:00
14:44:13

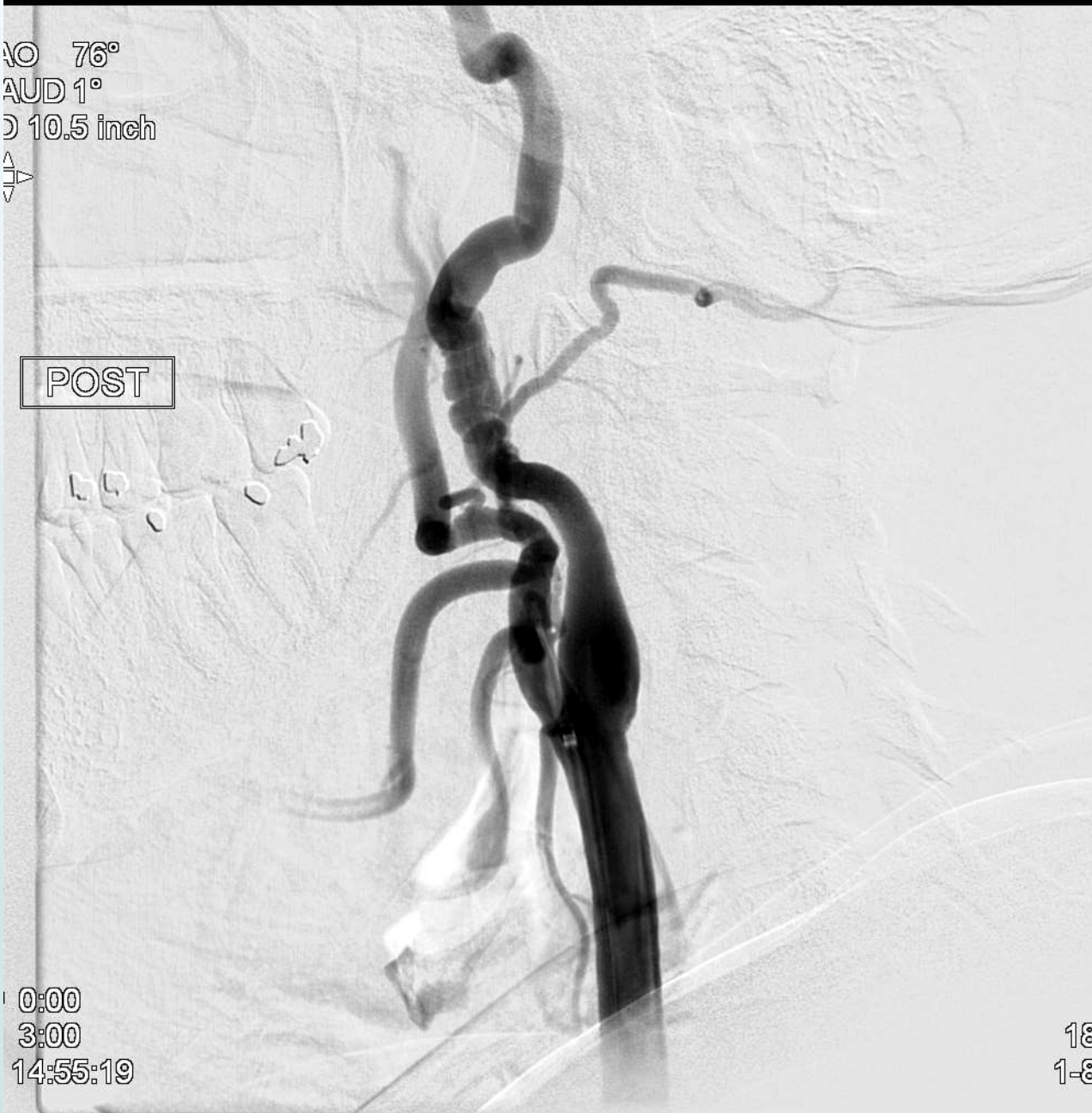
5:49

AO 76°
AUD 1°
D 10.5 inch
A

POST

0:00
3:00
14:55:19

18
1-8





Pre



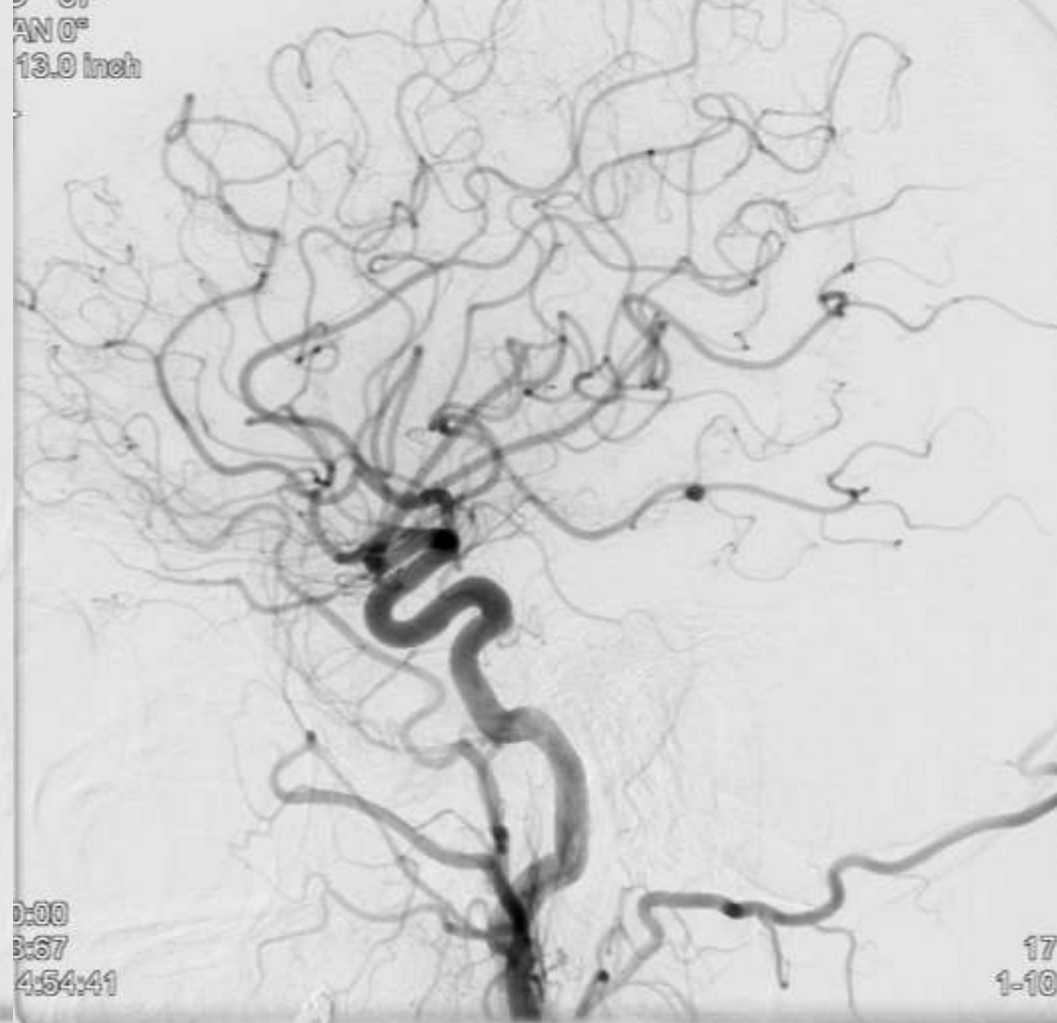
Post

LAO 5°
CRAN 8°
FD 13.0 inch



0:00
3:67
14:54:01

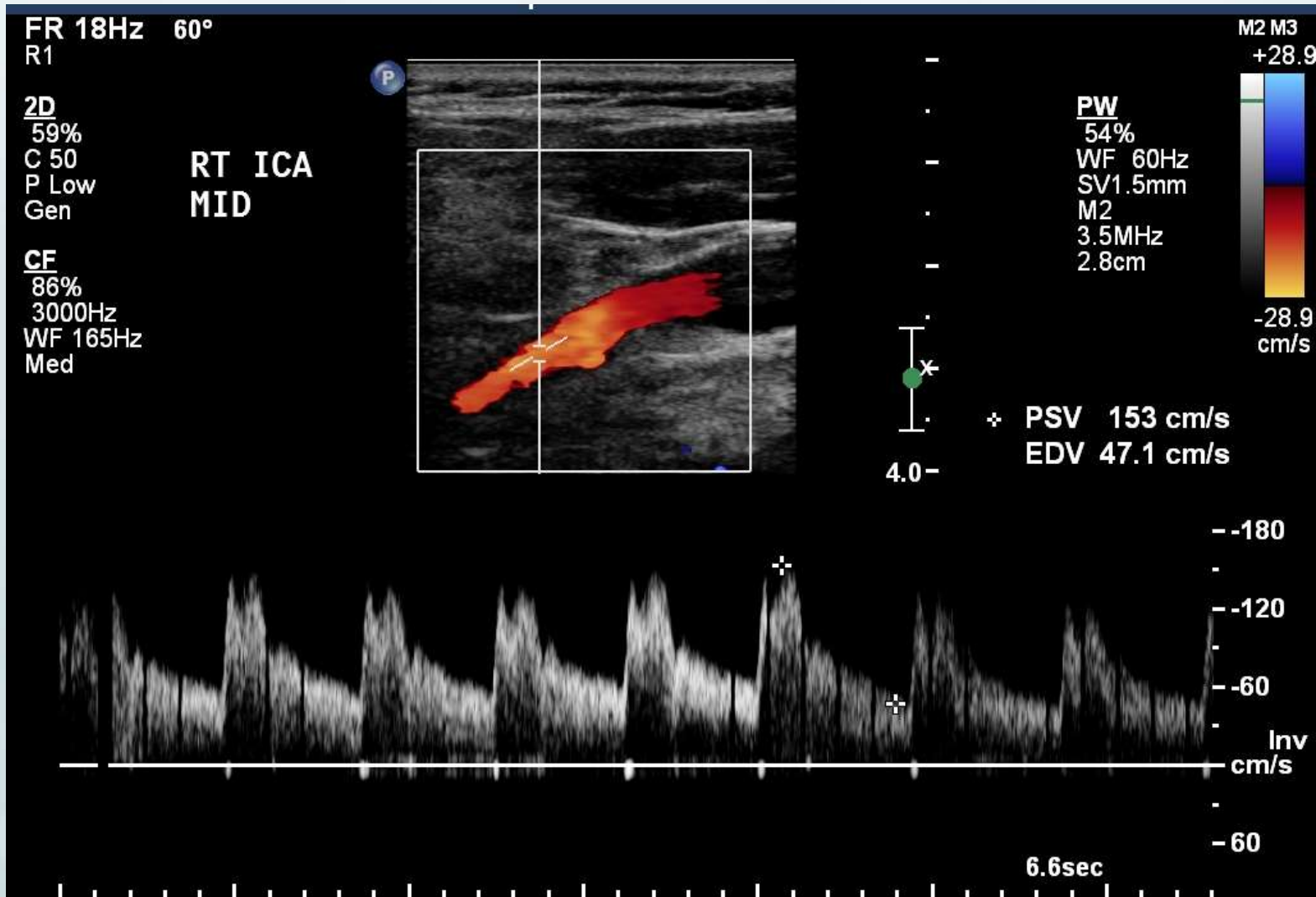
LAO 87°
CRAN 0°
FD 13.0 inch



0:00
3:67
14:54:41

17
1-10

Duplex Ultrasound Post Procedure

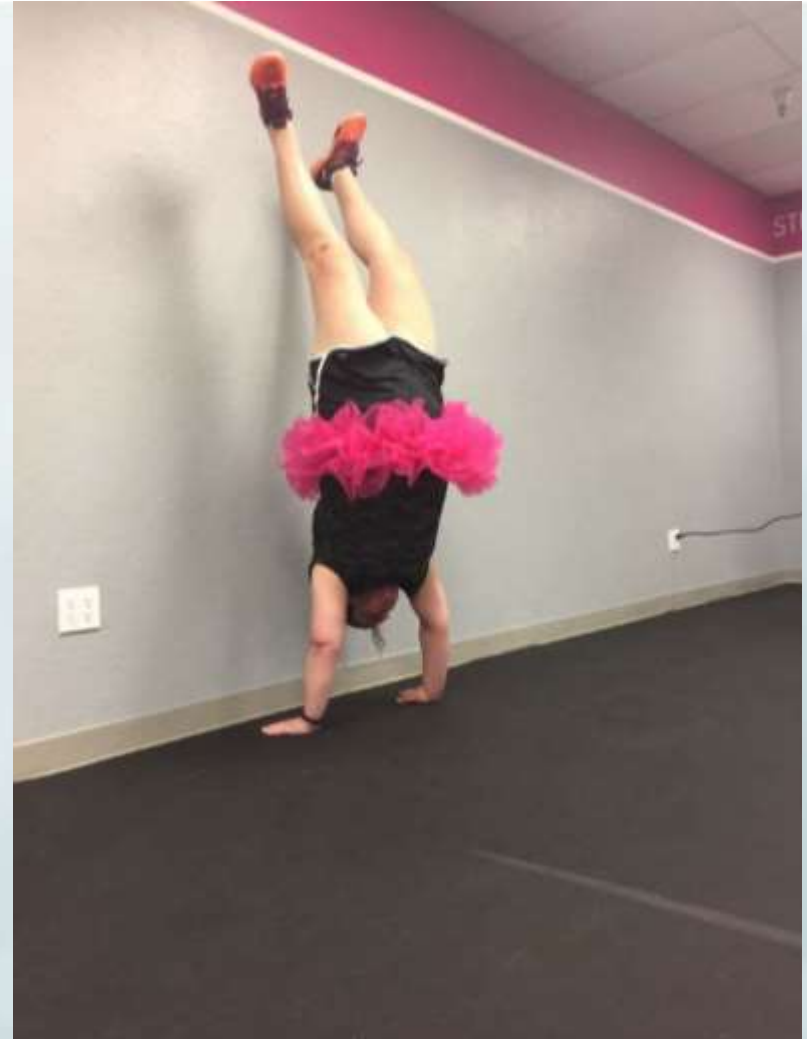


Clinical Course

- Immediate post op:
 - No neurologic complications
- One month:
 - Hand strength improved – almost to baseline
 - BP controlled on Labetolol
 - Patient stopped smoking
 - One month of clopidogrel, ASA indefinitely

3 Years Later

- Doing well
- Neurologic deficits completely resolved
- Carotid artery widely patent on duplex study – Doppler velocities unchanged from immediate post procedure



What is FMD?

- Uncommon, primarily multifocal arterial disease of unknown cause.
- Characterized by non-atherosclerotic lesions involving the intima, media and adventitia.
- Small to medium sized arteries, most often in the renal and carotid arteries.
- Observed in all arterial beds in the body.

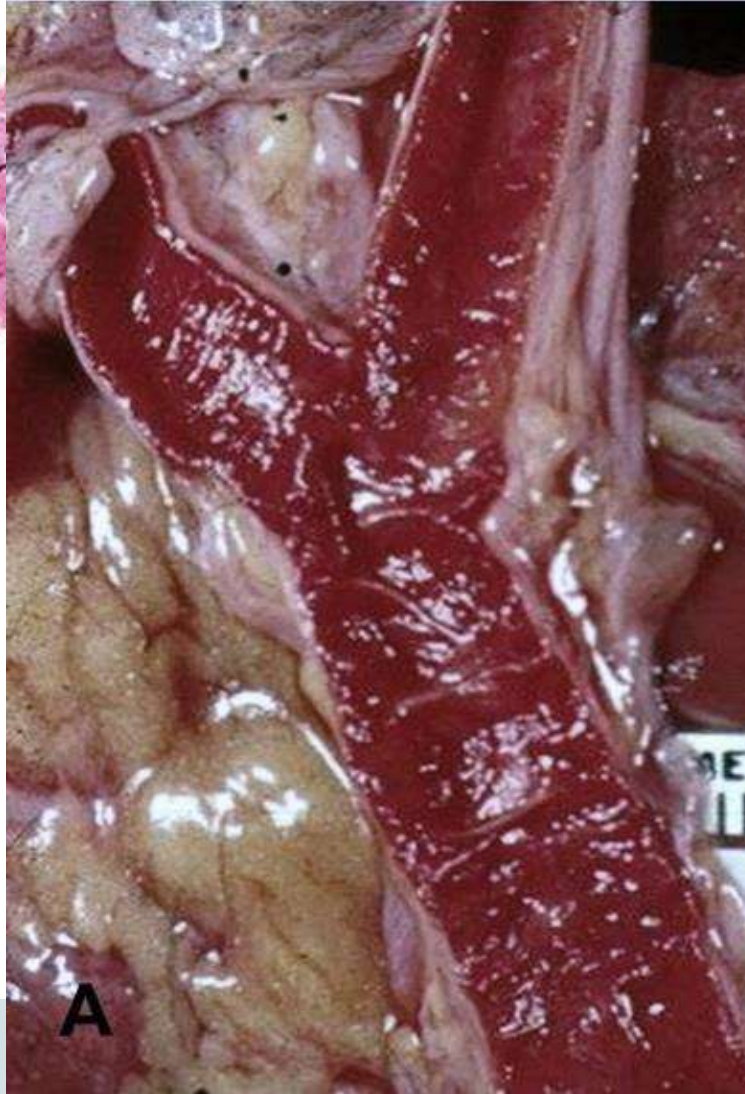
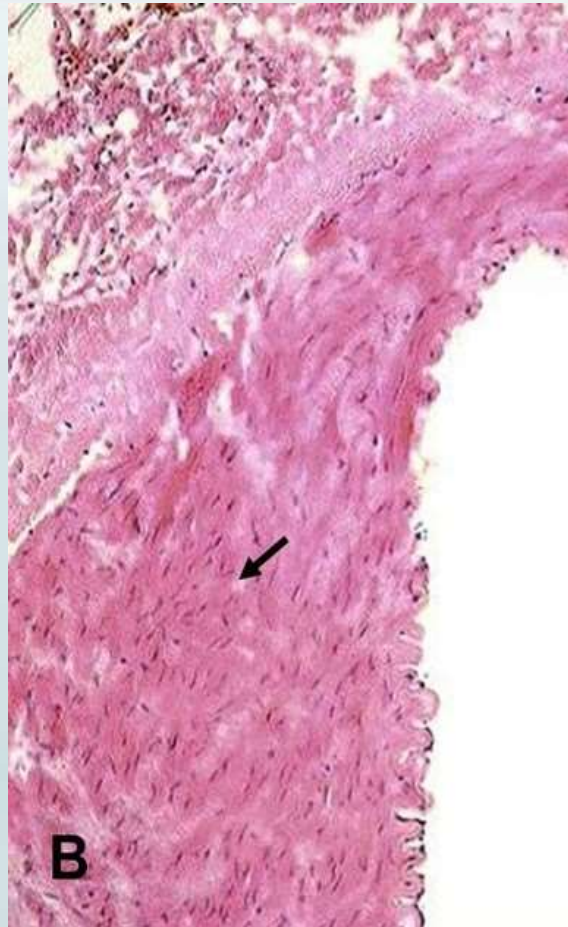
FMD Classification

- Intimal fibroplasia
- Medial dysplasia
 - Medial fibroplasia
 - Perimedial fibroplasia
 - Medial hyperplasia
- Adventitial fibroplasia (periarterial fibroplasia)

Medial fibroplasia

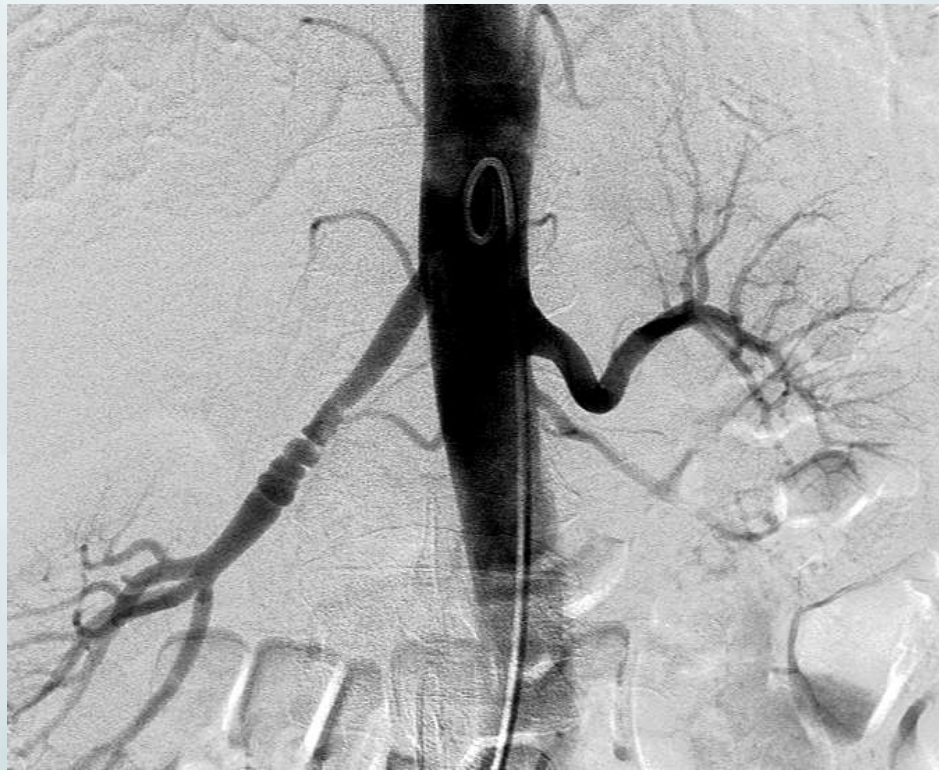
- Most common type (>80%)
- “string of beads” appearance
 - Characterized by alternating areas of focal narrowing and dilatations
 - Dilatations larger than normal vessel diameter
- Collagen deposits in elastic tunica media

Medial fibroplasia

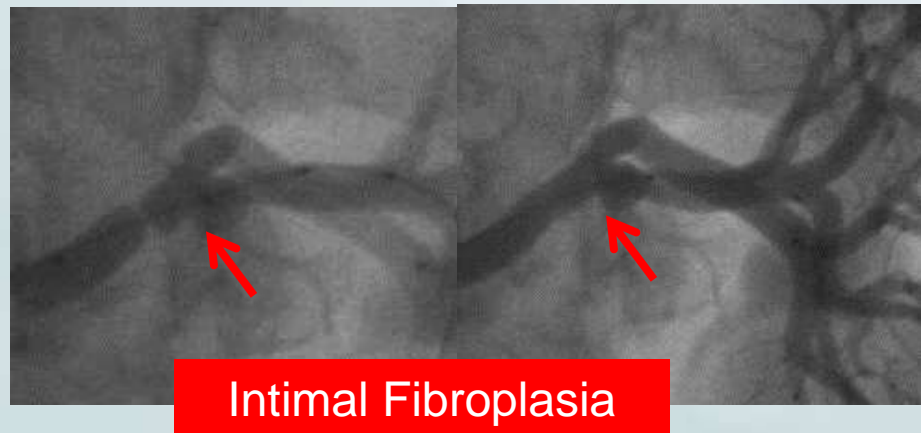
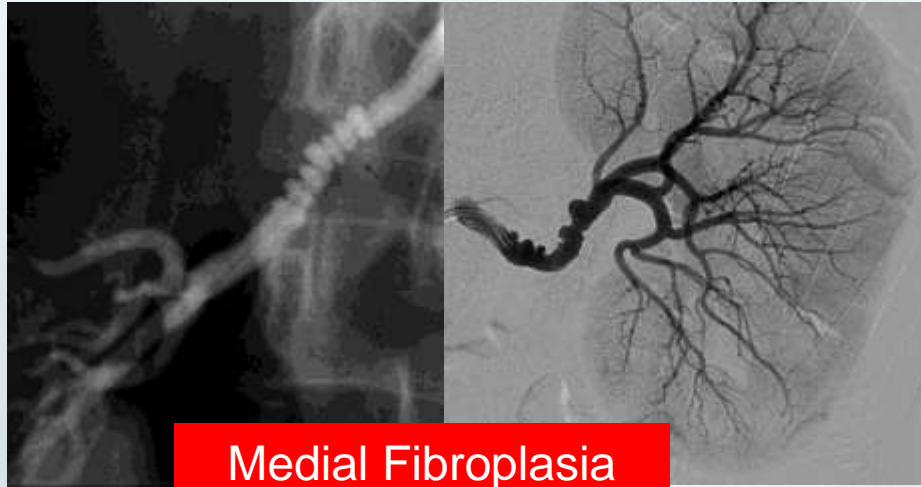


Prevalence

- Renovascular FMD most common
 - 60-75%
- Cervicocranial FMD
 - 25-30%
- Other
 - Mesenteric
 - Lower extremity (external iliac)
 - Brachial, coronary



Fibromuscular Dysplasia (FMD)



- Medial fibroplasia
 - 80%-90% of FMD
 - “String of beads”
- Intimal fibroplasia
 - 10%
 - Focal/tubular smooth constriction

Trinquart, L. Hypertension. 2010;56:525-532;

Olin, JW. J Vasc Surg. 2011;53:826-836

Fibromuscular Dysplasia (FMD)

- Typical manifestation: hypertension
- Renal dysfunction unusual
- Angiography alone is unreliable as a determinate of severity of FMD
- Treatment: balloon angioplasty

Trinquart, L. Hypertension. 2010;56:525-532;

Olin, JW. J Vasc Surg. 2011;53:826-836

Cervicocranial FMD

- Extracranial ICA involved 95% of cases
 - Affects C1 & C2 segment (mid and distal ICA)
 - Vessel tortuosity common (“S” bend)
- Vertebral artery involved 12-43%
- Intracranial aneurysms as high as 51%

Presentation

- Asymptomatic
- Stroke/TIA
- Headache, migraine type
- Dizziness
- Pulsatile tinnitus
(swooshing in the ears)
- Spontaneous dissection



Late complication of FMD and Carotid Dissection



- H
 - F
 - M
- Run Number: 0008
Volume Type: 3DRA
Run Date: 2011/09/02
Run Time: 13:01:24
Cube Size: 104.84 mm

Carotid Stenting



Baseline



Final

Conclusions

- Although frequently benign, FMD can present with a variety of serious complications
- Have a high index of suspicion in appropriate clinical situations
- Evaluate for FMD in all relevant vascular beds
- Duplex ultrasound a useful diagnostic tool in these patients