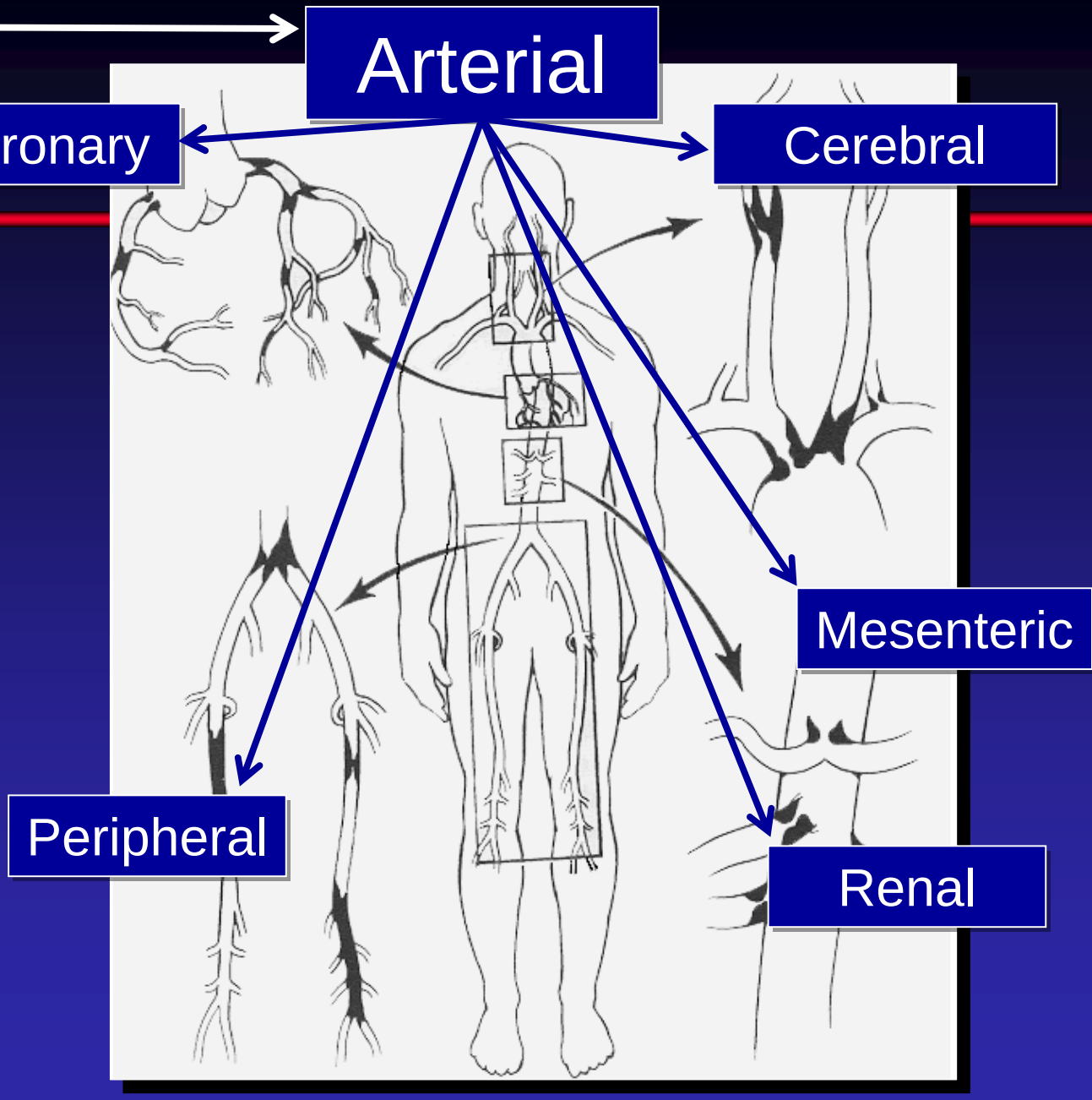
Global Vascular Intervention 2009

Luis F. Tami, MD
Cardiac Cath Lab Director
Chief Department Vascular Services
Memorial Regional Hospital

Vascular Disease

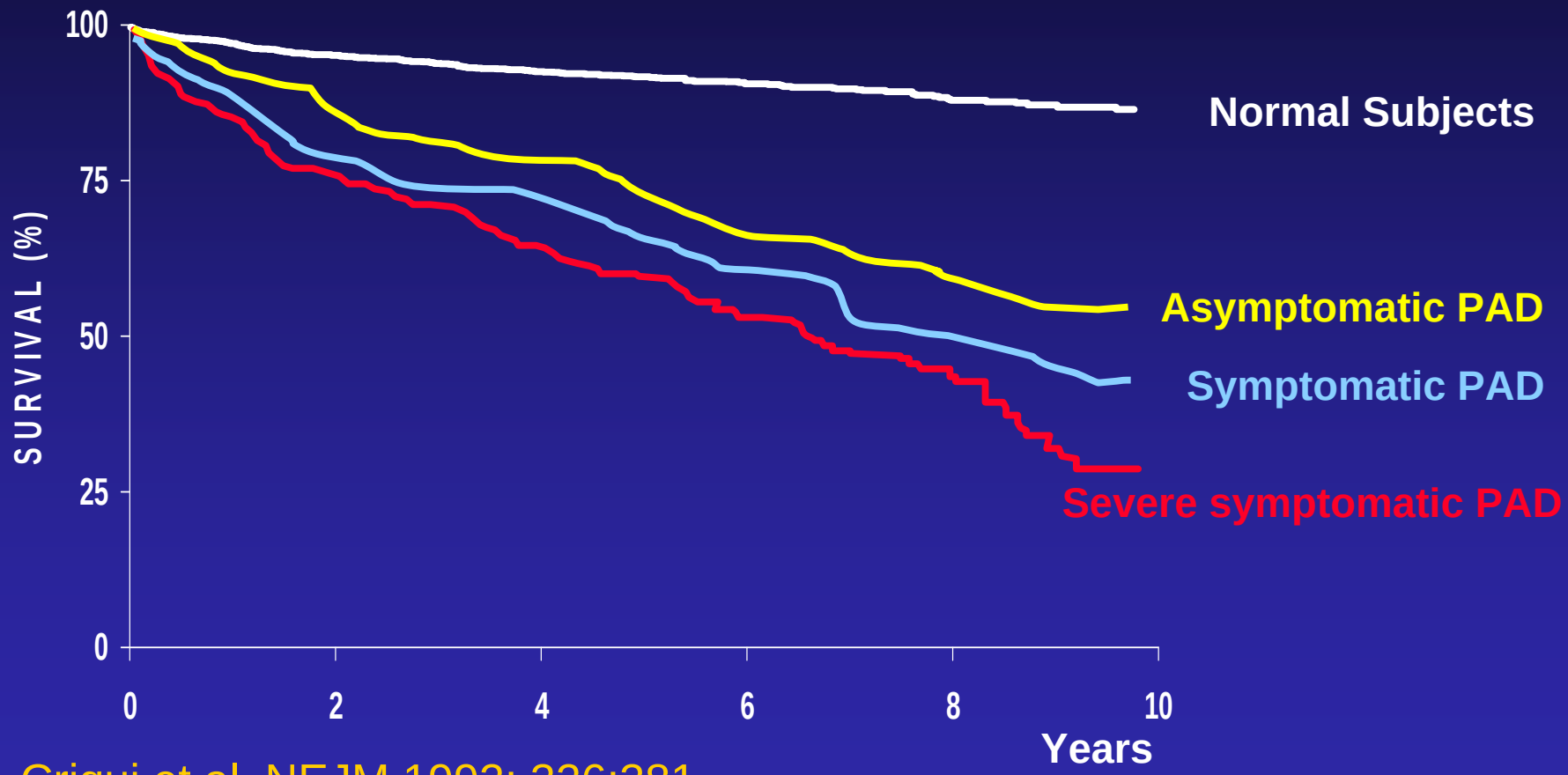
COMMON KNOWLEDGE: "Atherosclerotic Arterial Disease is Systemic"

BUT WE NEED TO EMPHASIZE THAT "Evaluation Should Be Proactive"



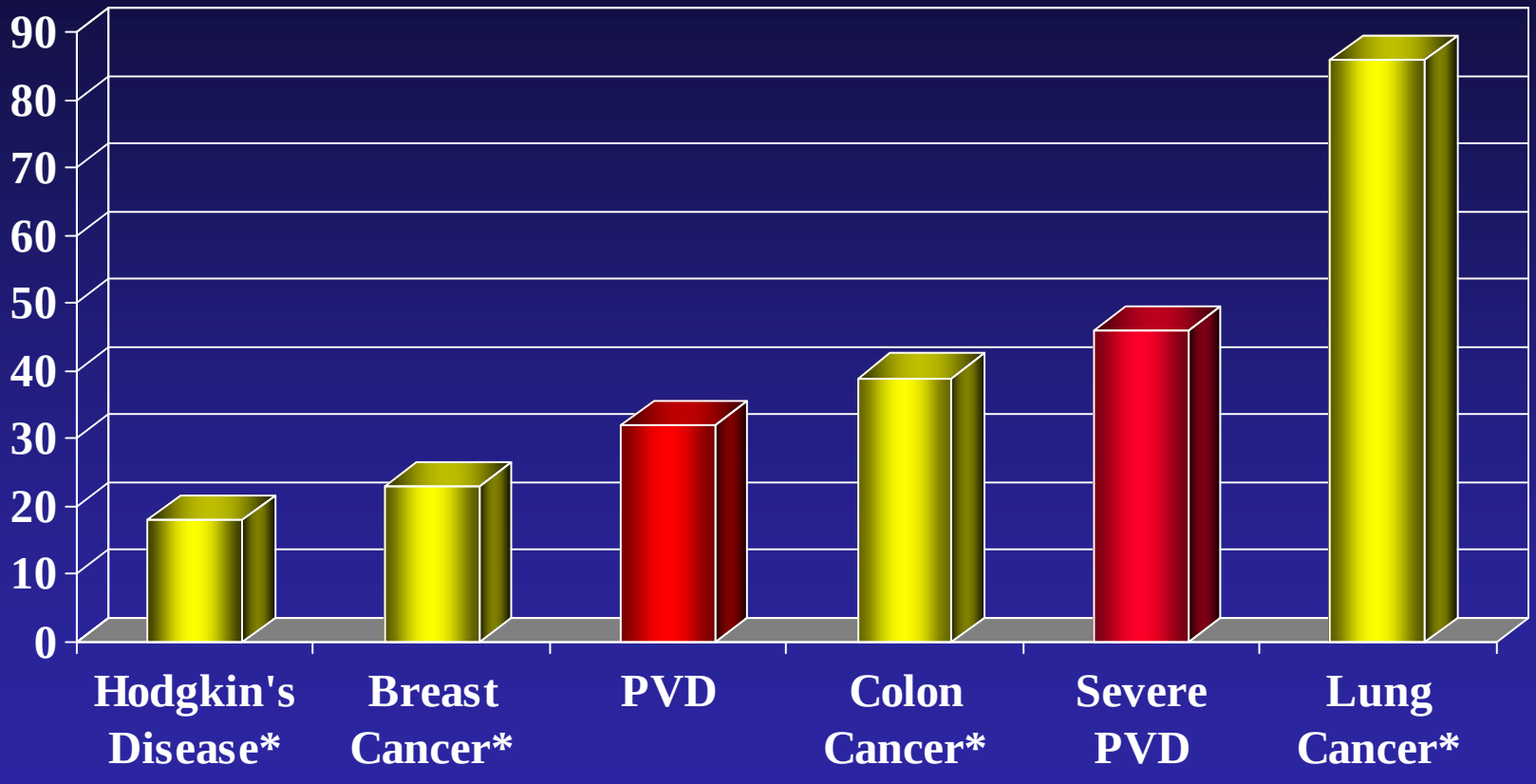
AHA Consensus Nomenclature. Circulation 2008

Survival in Peripheral Arterial Disease



Criqui et al. NEJM 1992; 326:381

5-Year Mortality in PAD Compares with CA



Criqui MH et al. NEJM 1992; 326:381

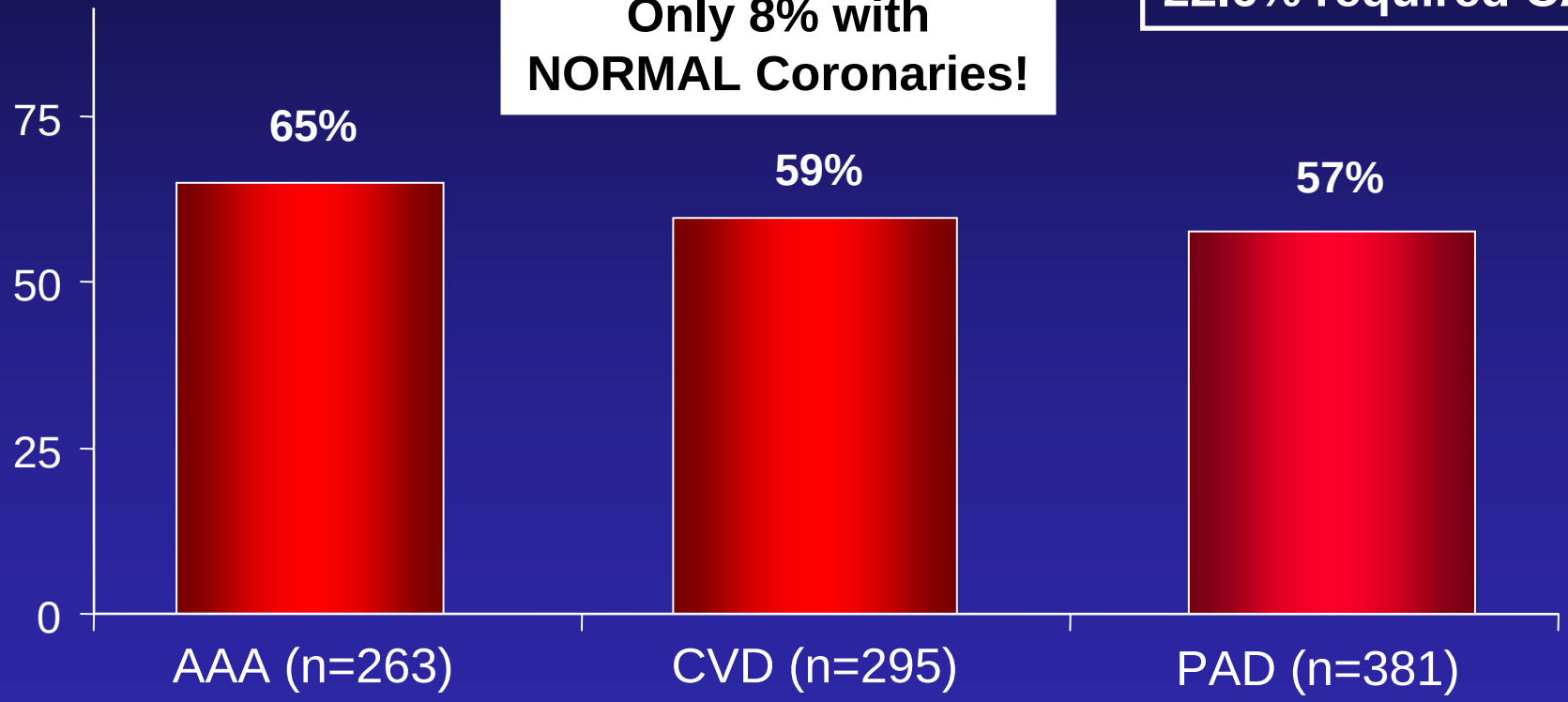
*American Cancer Society, Facts and Figures, 2000

Prevalence of Significant CAD in PVD Patients

(Cardiac Cath in 1,000 patients for elective Peripheral Angio at the Cleveland Clinic).

22.6% required CABG

Only 8% with NORMAL Coronaries!



Significant CAD- at least one lesion greater than 70%

Hertzer et al. Ann Surg 1984;199:223.

Management in Vascular Patients (even if ASYMPTOMATIC)

- **Lipid Modification**

  Statin for LDL < 70 and HDL > 40 (> 50 in females)

- **ACE inhibitors**

  RAMIPRIL (HOPE trial)

- **Antiplatelet Therapy**

  ASPIRIN: Antiplatelet Trialists' Collaboration

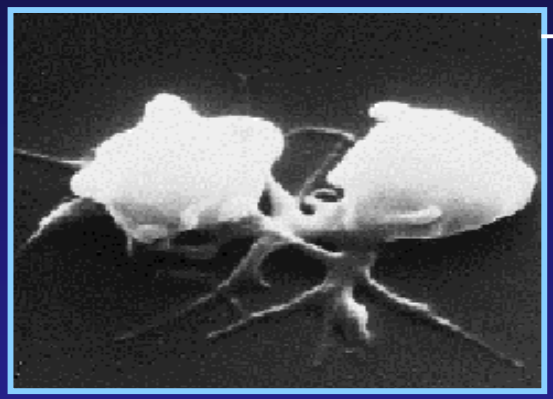
  CLOPIDOGREL: CAPRIE, CHARISMA

SYMPTOMATIC THERAPY

Cilostazol (Pletal) 100 mg BID on empty stomach

Platelets: A Hemostatic and Inflammatory Cell

Inflammatory Modulators Produced by Activated Platelets

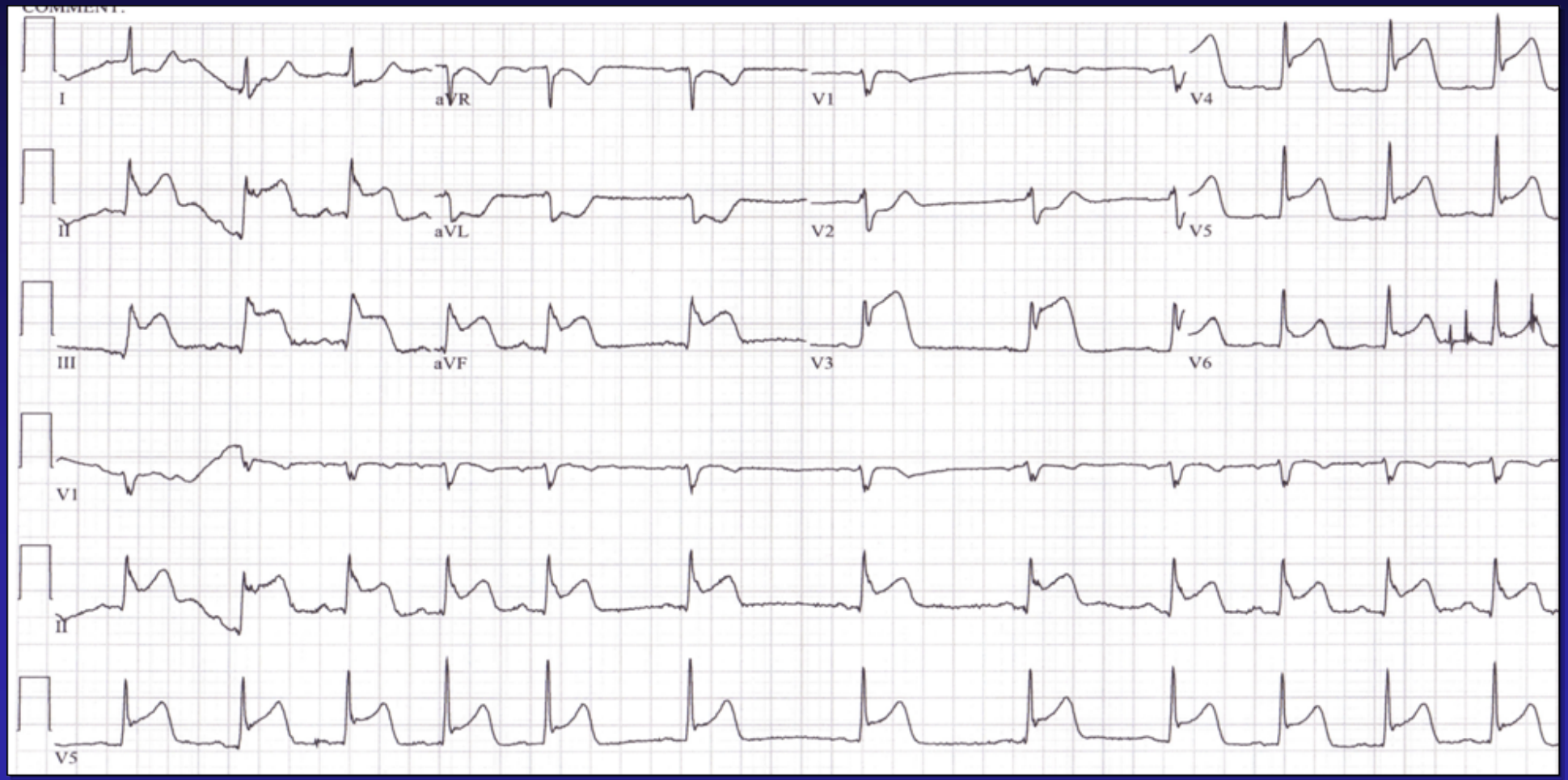


- Platelet-derived growth factor
- Platelet factor 4
- CD 154 (CD40L)
- RANTES*
- Thrombospondin
- Transforming growth factor-β
- Nitric oxide

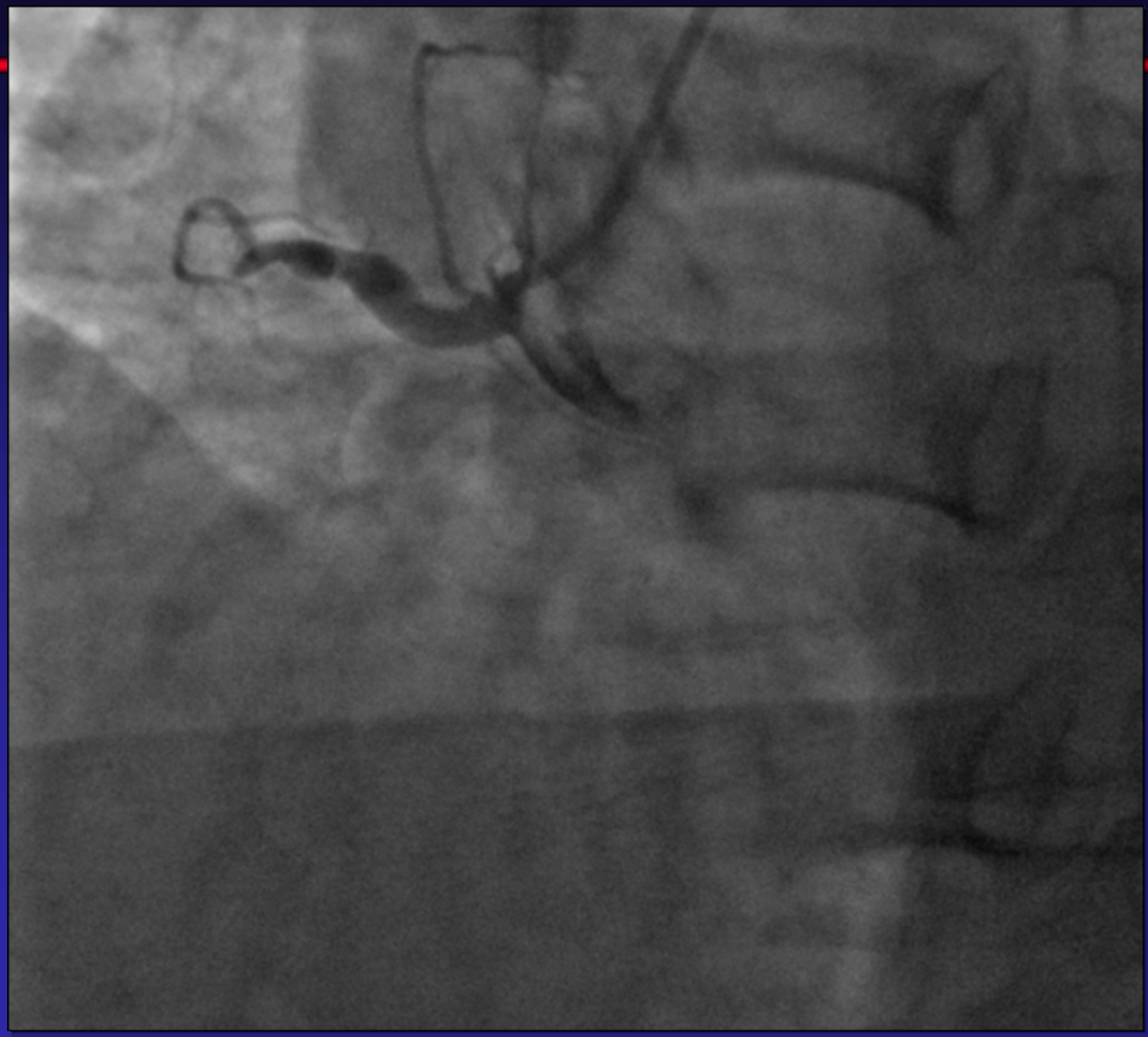
*Regulated on activation, normal T-cell-expressed and -secreted.

Libby P et al. *Circulation*. 2001:103:1718-1720.

CASE: 43 yr old police officer with PVD with claudication for about 1 year. Aorto-bifem offered after he stops smoking. No meds.



RCA occlusion

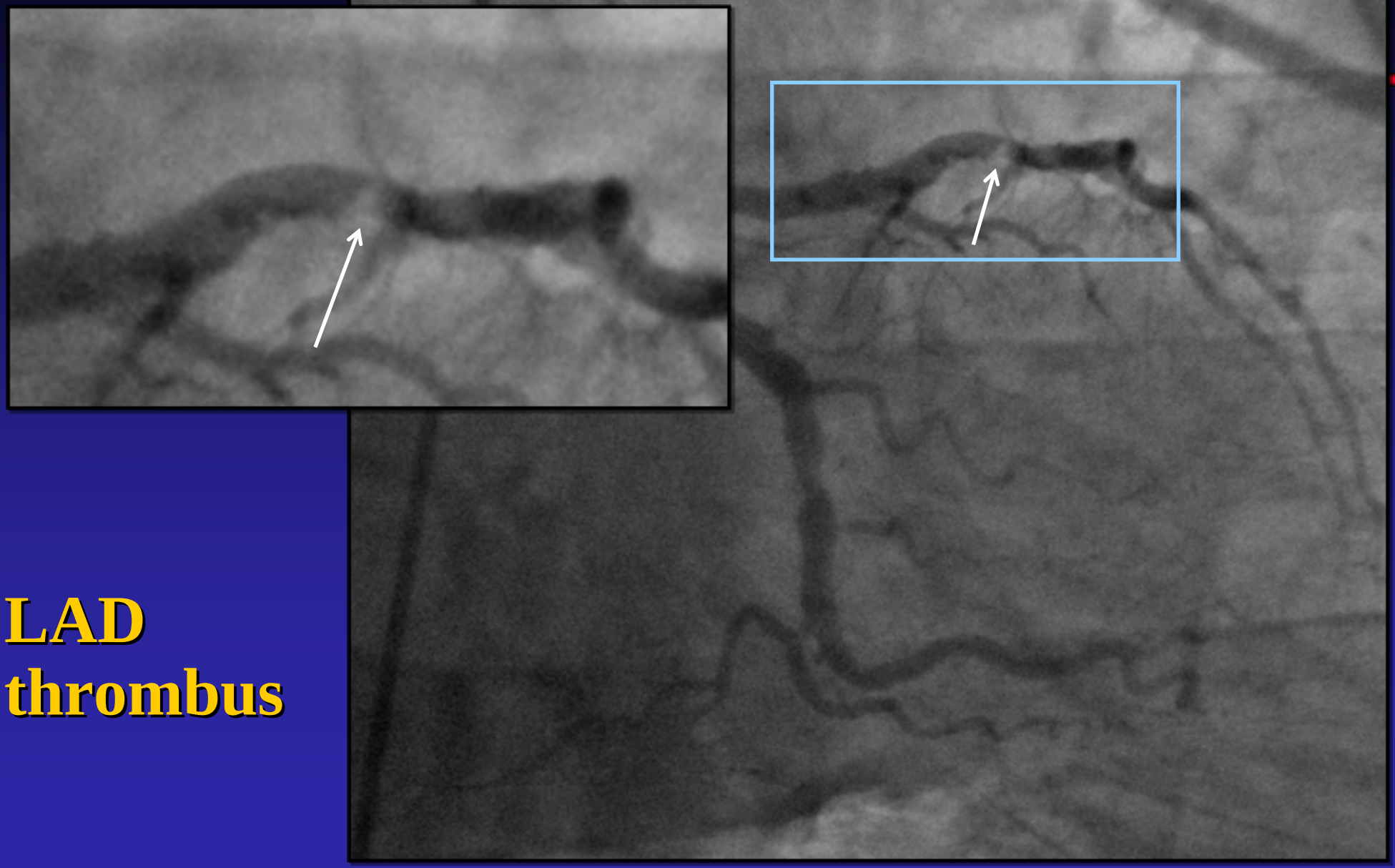


RCA: After stenting

RCA thrombectomy

First Pass (proximal RCA)

Distal RCA embolization

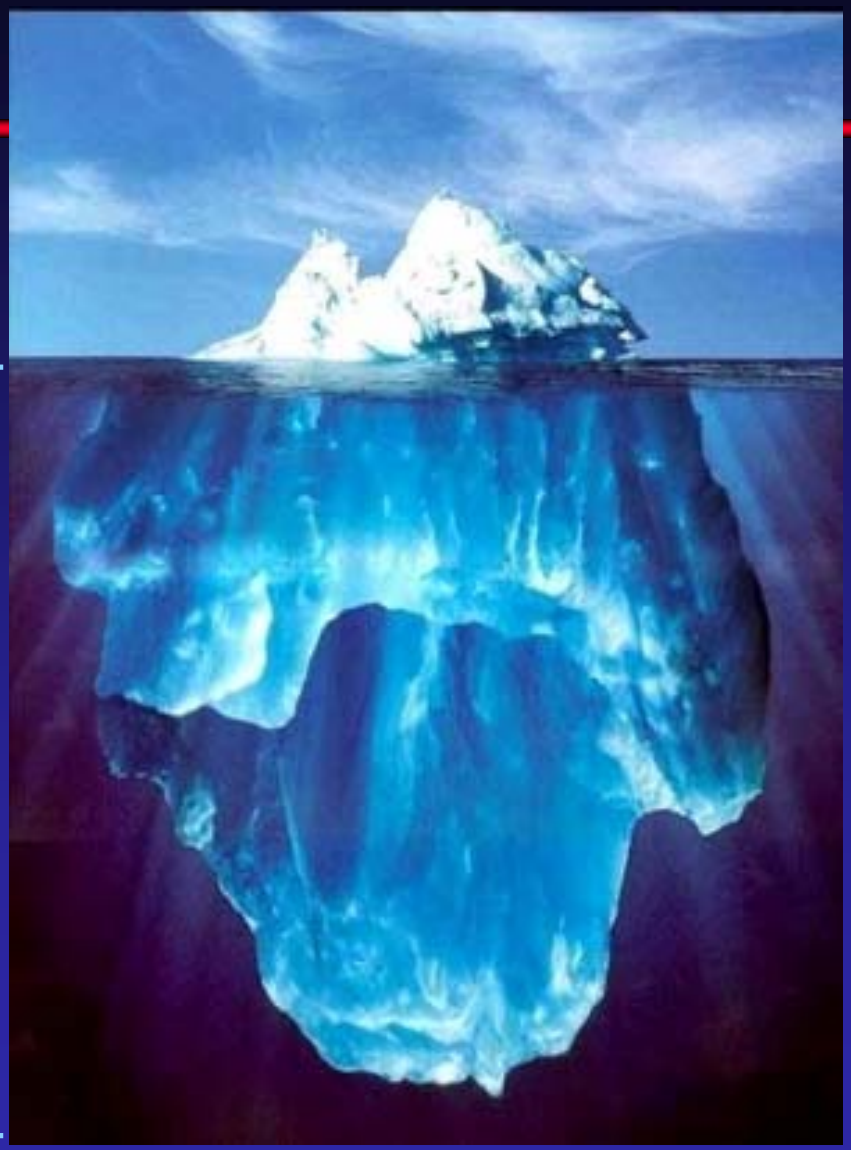


LAD thrombus

PVD POPULATION

Revascularization: Percutaneous / surgical

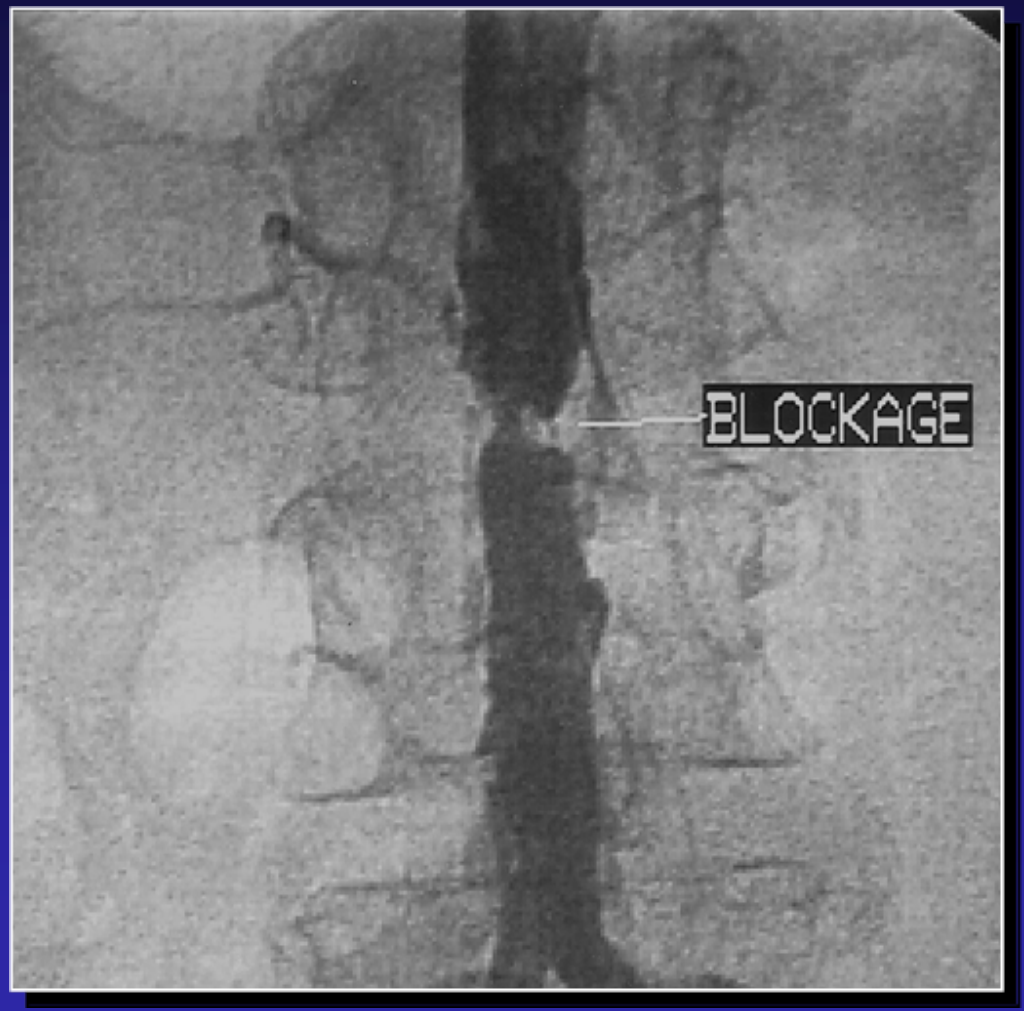
Atherosclerotic Vascular Disease is treated medically.



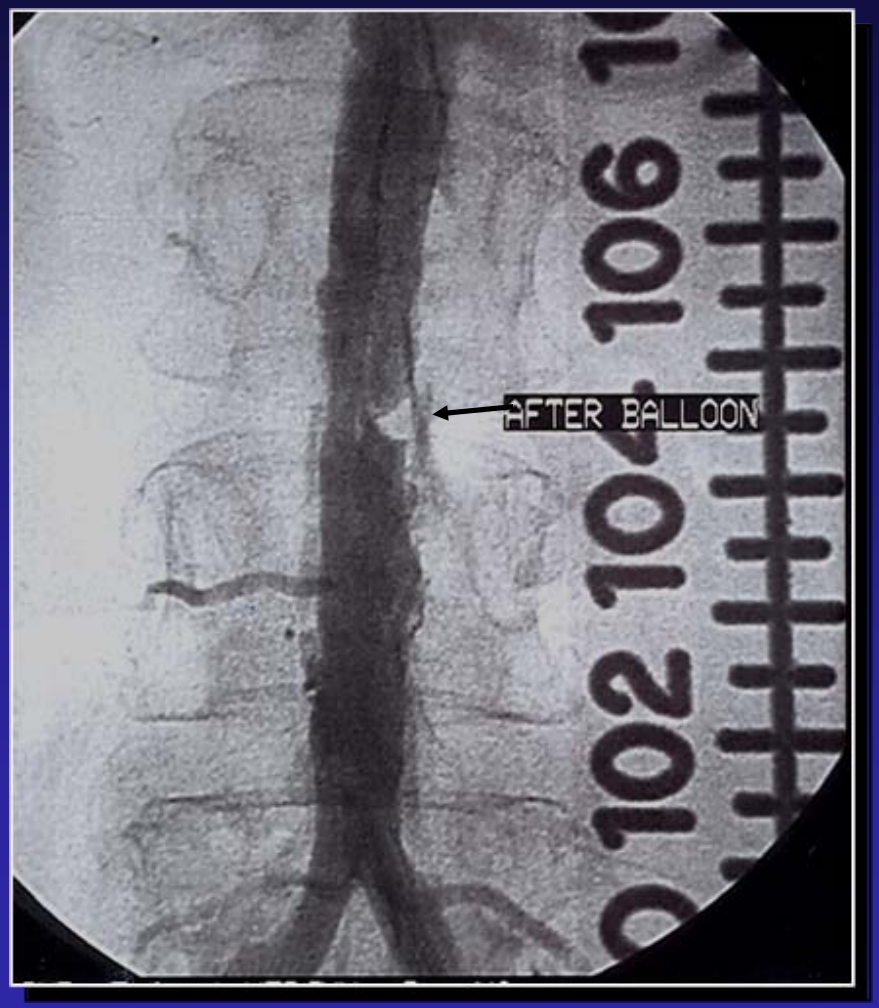
Aortic Occlusive Disease

56 yrs-old female, smoker with typical claudication comes for second opinion

Because good DP pulses and a normal duplex ultrasound, diagnosis of PAD had been “excluded”.



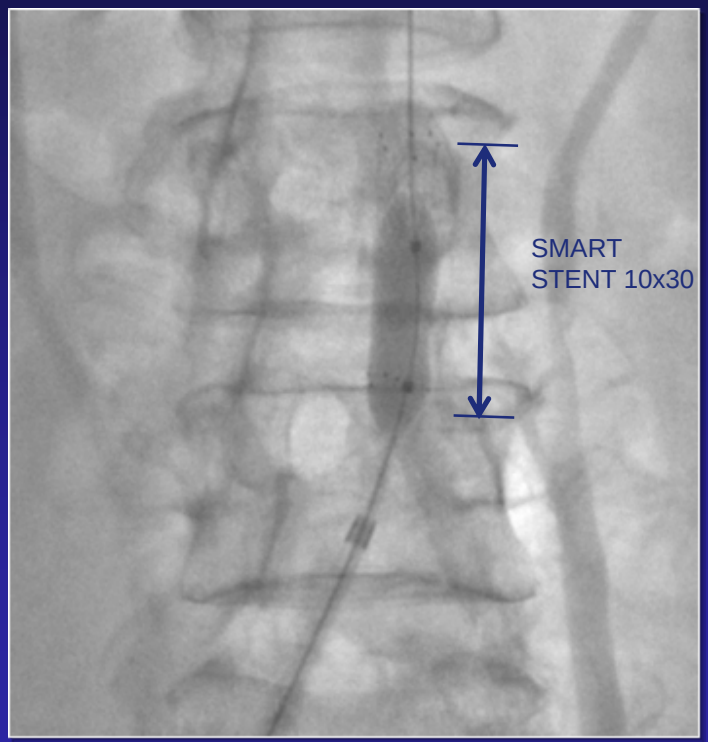
Aortic Stent



Bilateral hip pain

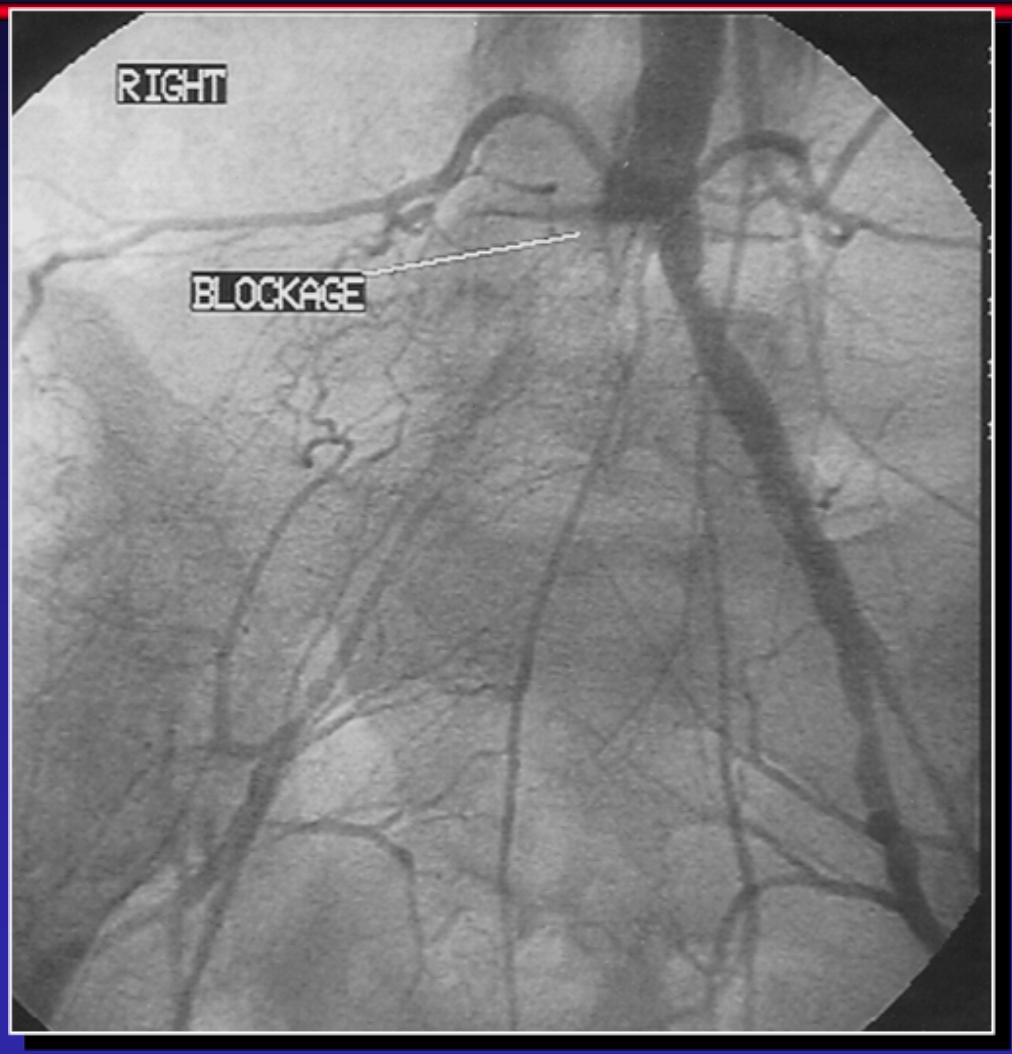
55 yr wf
- Bilateral leg fatigue and hip pain
- Resting ABIs: 0.77 and 0.81.
- After 5 min at 2 mph, 0.29 and 0.33 in the R and L leg respectively.
- Recent LCx stent
L ICA is occluded.
-LDL 167, HDL 27
-Smokes 1 ppd

Abdom Aortic Stent

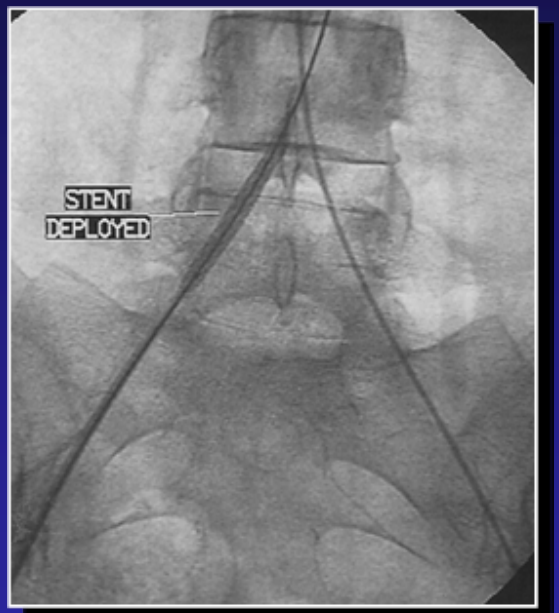


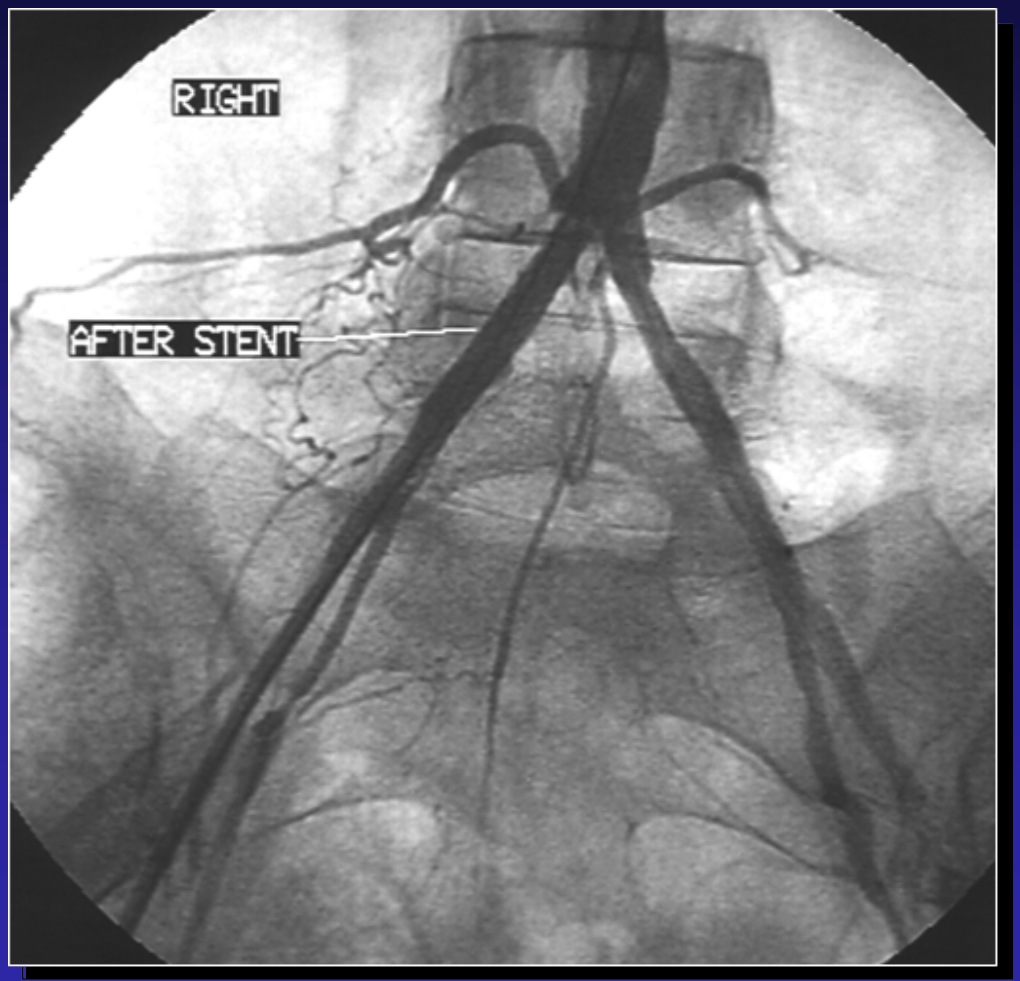
Iliac Artery Disease: Chronic occlusion

- 76 yrs-old h/o HTN. Severe right hip pain on Naprosyn.
- Aorto-bifemoral bypass offered. Comes in for a second opinion.
- Prior CABG 1 yr ago. EF 38%. No angina
- Meds: Procardia XL60 mg and aspirin.
- R ABI .6, L ABI .8

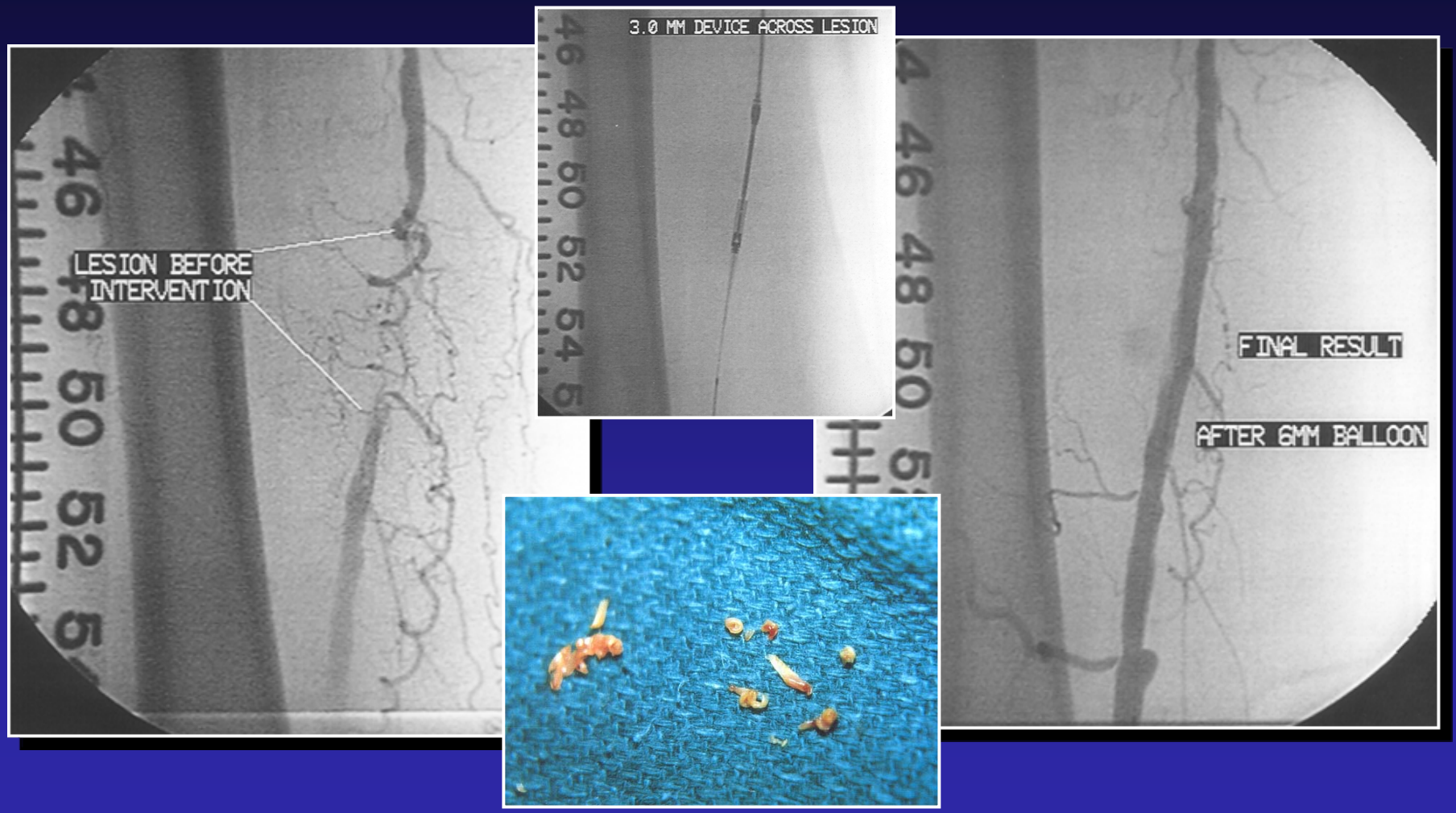


Iliac Artery Stent

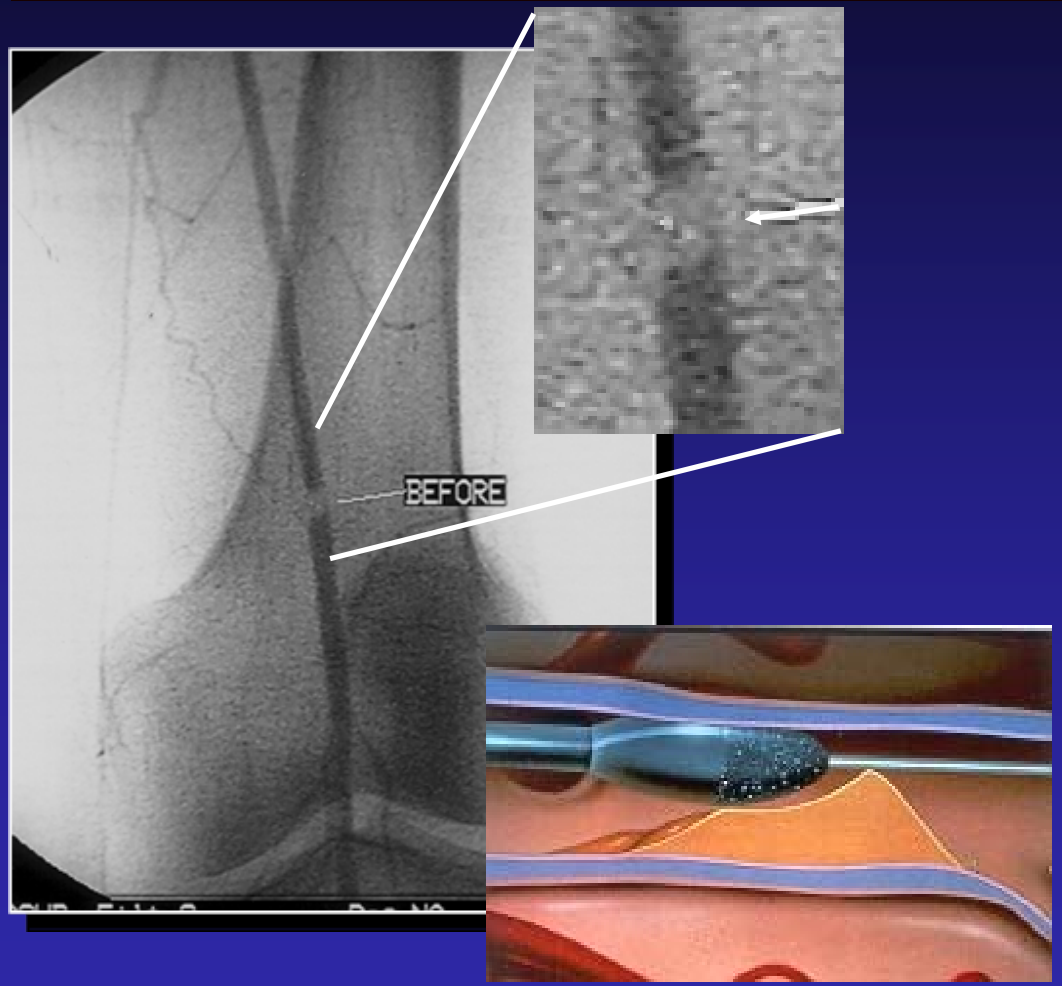




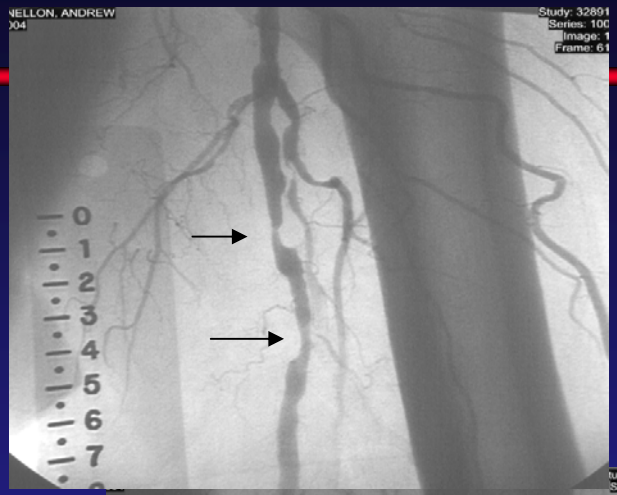
Short Right SFA Occlusion: Atherectomy

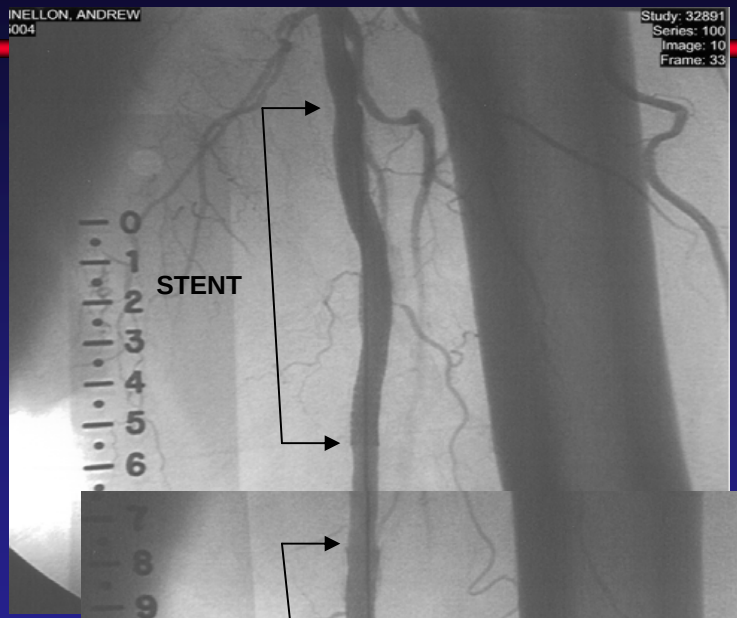


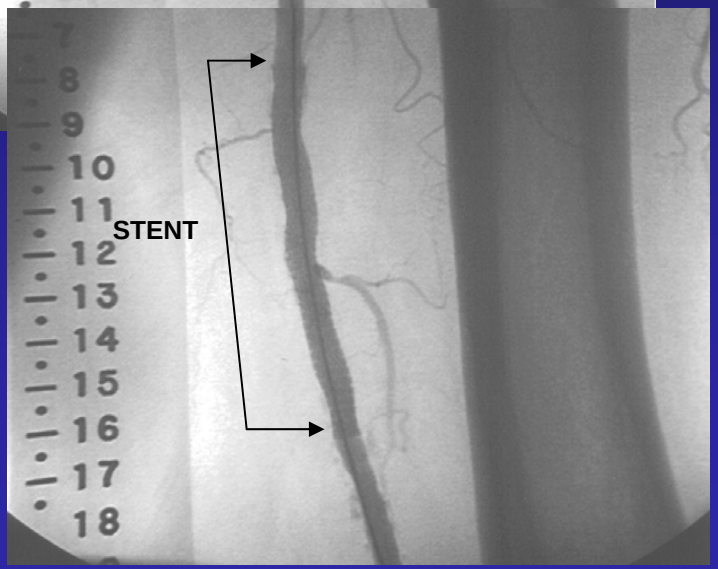
Eccentric, calcified SFA stenosis



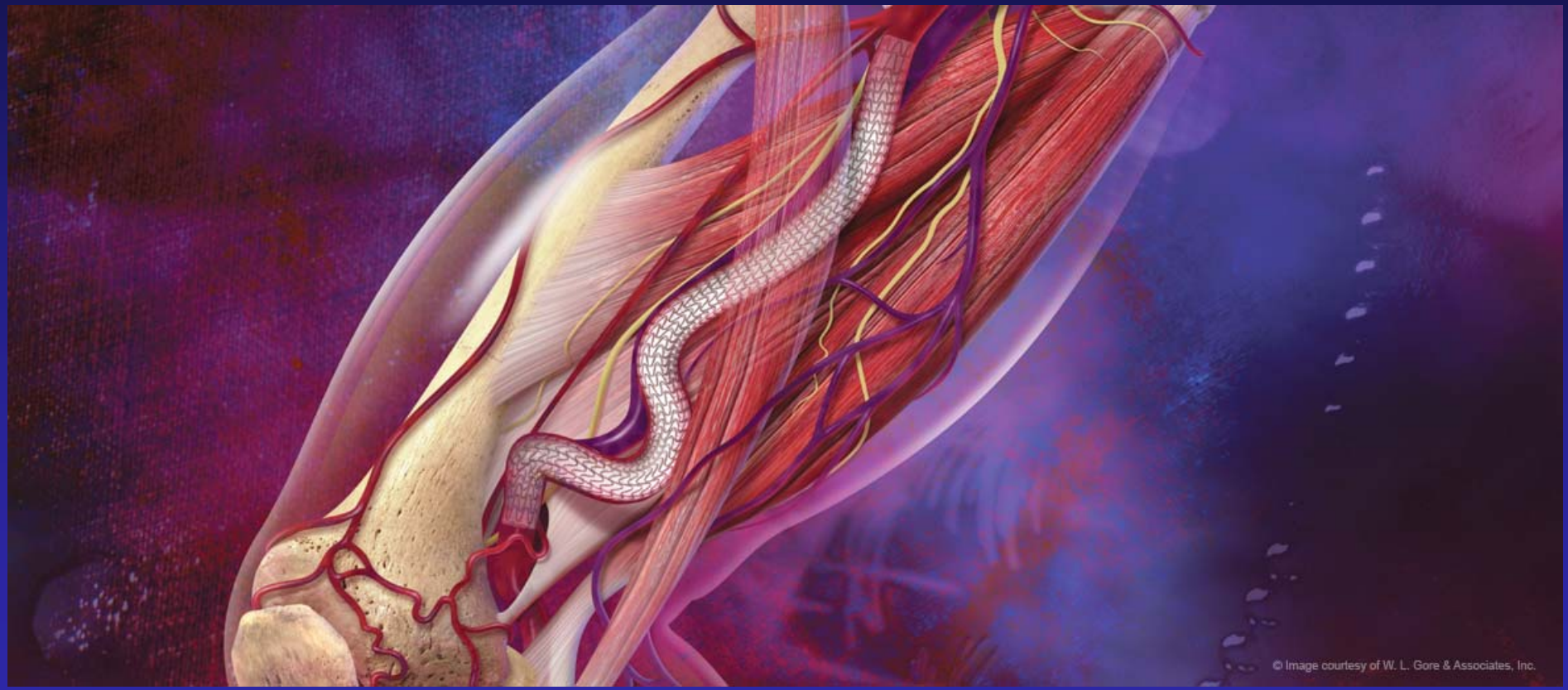
Diffusely diseased left SFA





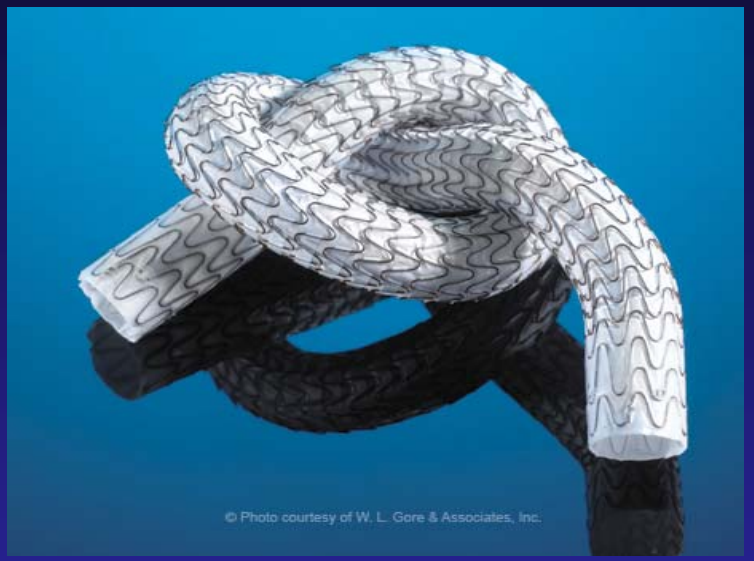


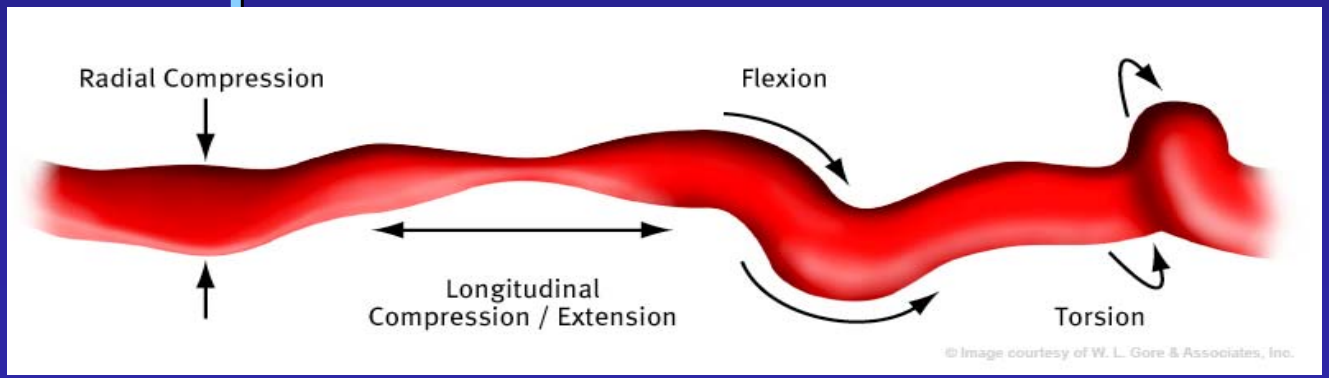
SFA: Mechanical forces, stent fractures



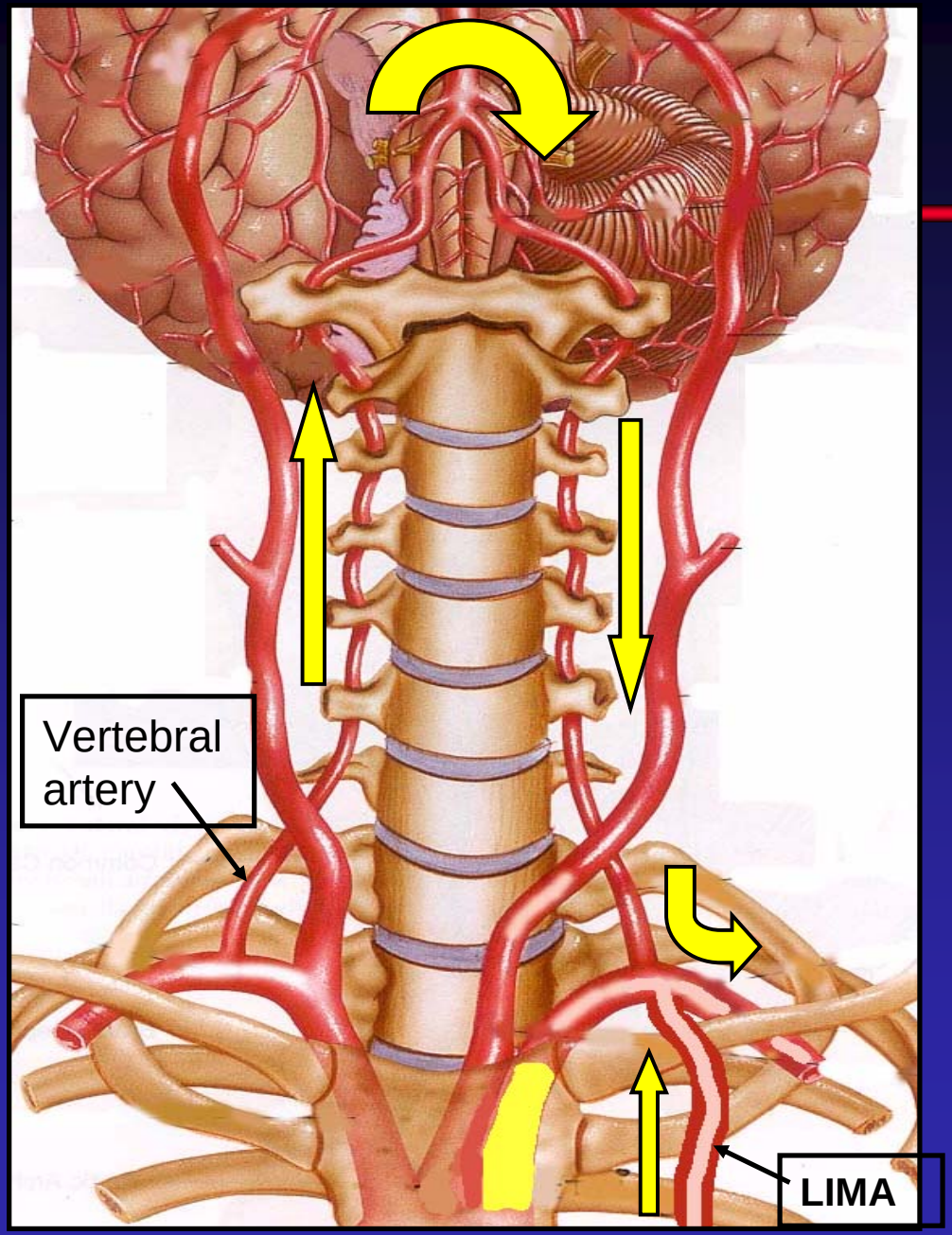
Compliant with the Mechanical Forces of the SFA

- Over 70,000 GORE VIABAHN® Endoprosthesis sold worldwide
- No fractures reported in the SFA
- Capable of longitudinal compression with little





Tibial Disease



Subclavian Steal

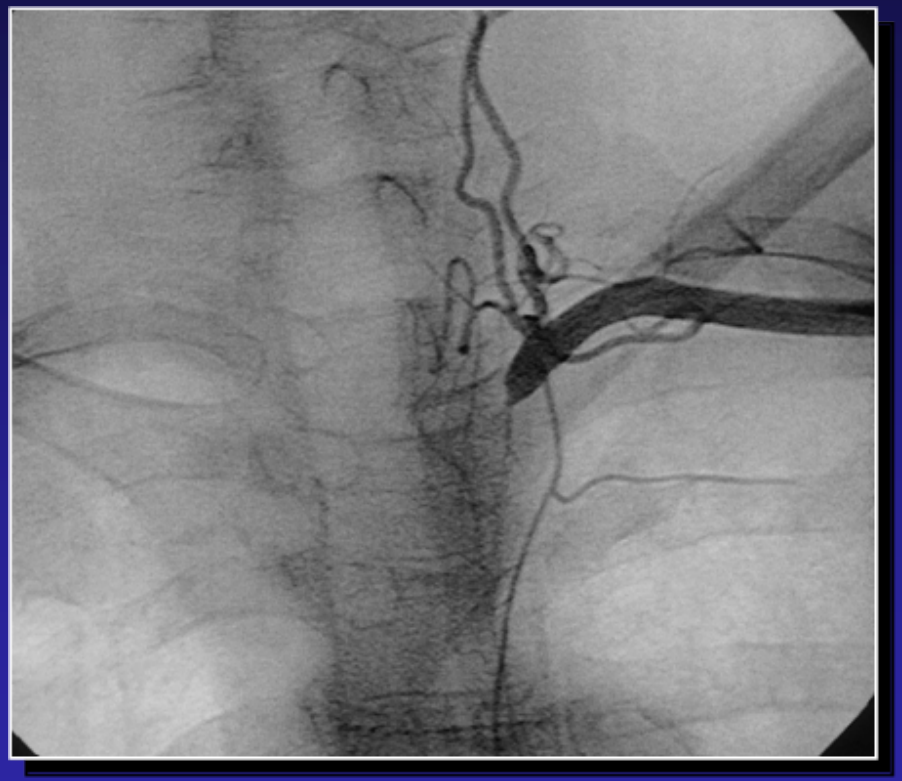
Stenosis/Occlusion of Suclavian Artery

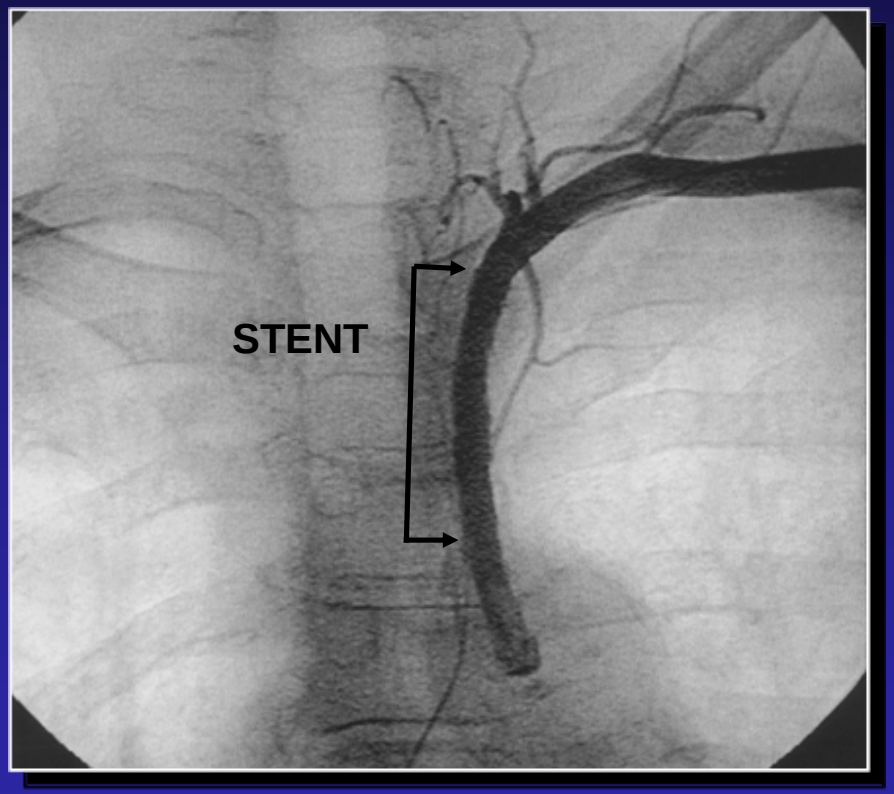
- Asymptomatic
- Neurological symptoms:
  Dizziness, Vertigo, VBI
- Arm claudication
- Angina if LIMA used

Dx: BP in both arms
Duplex U/S (Vertebral flow)

Tx: PTA/stent
CCA-subclavian bypass

Subclavian Steal Syndrome



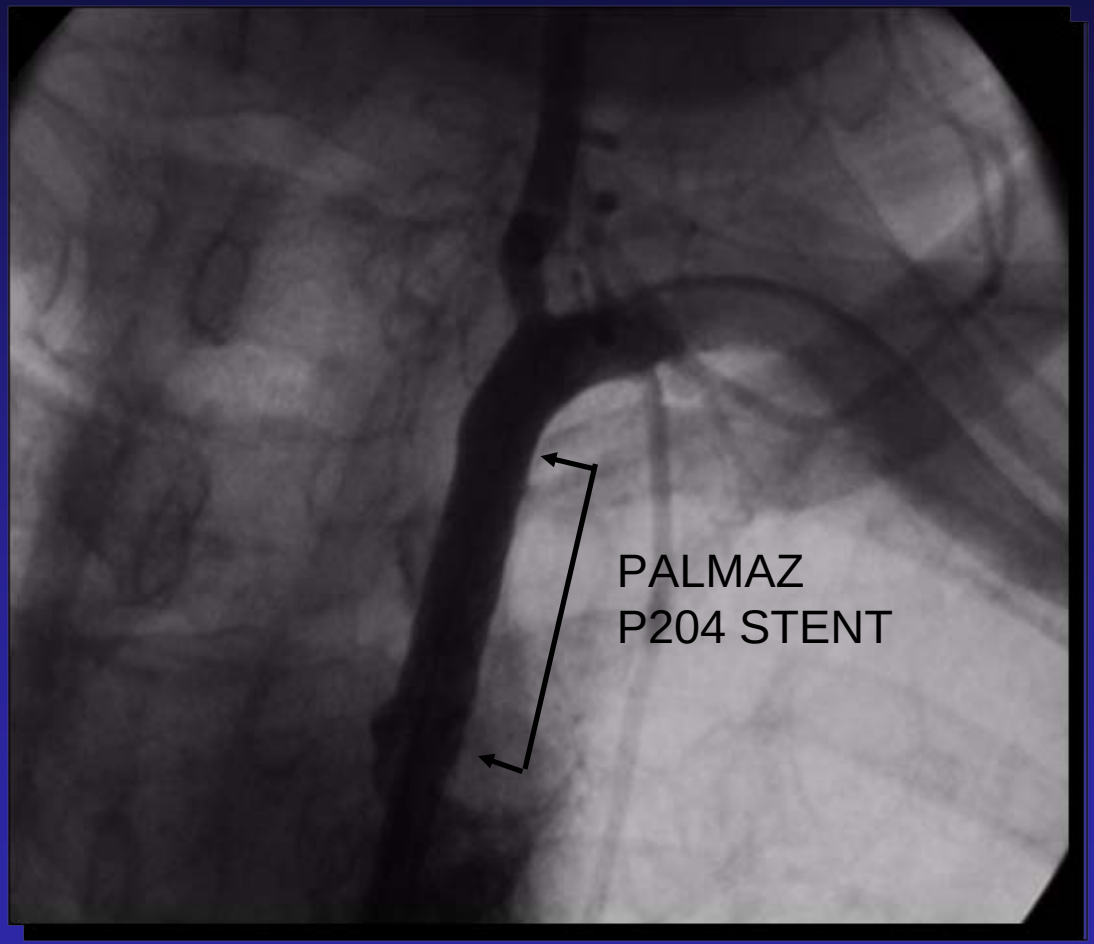


Left Subclavian Steal Syndrome

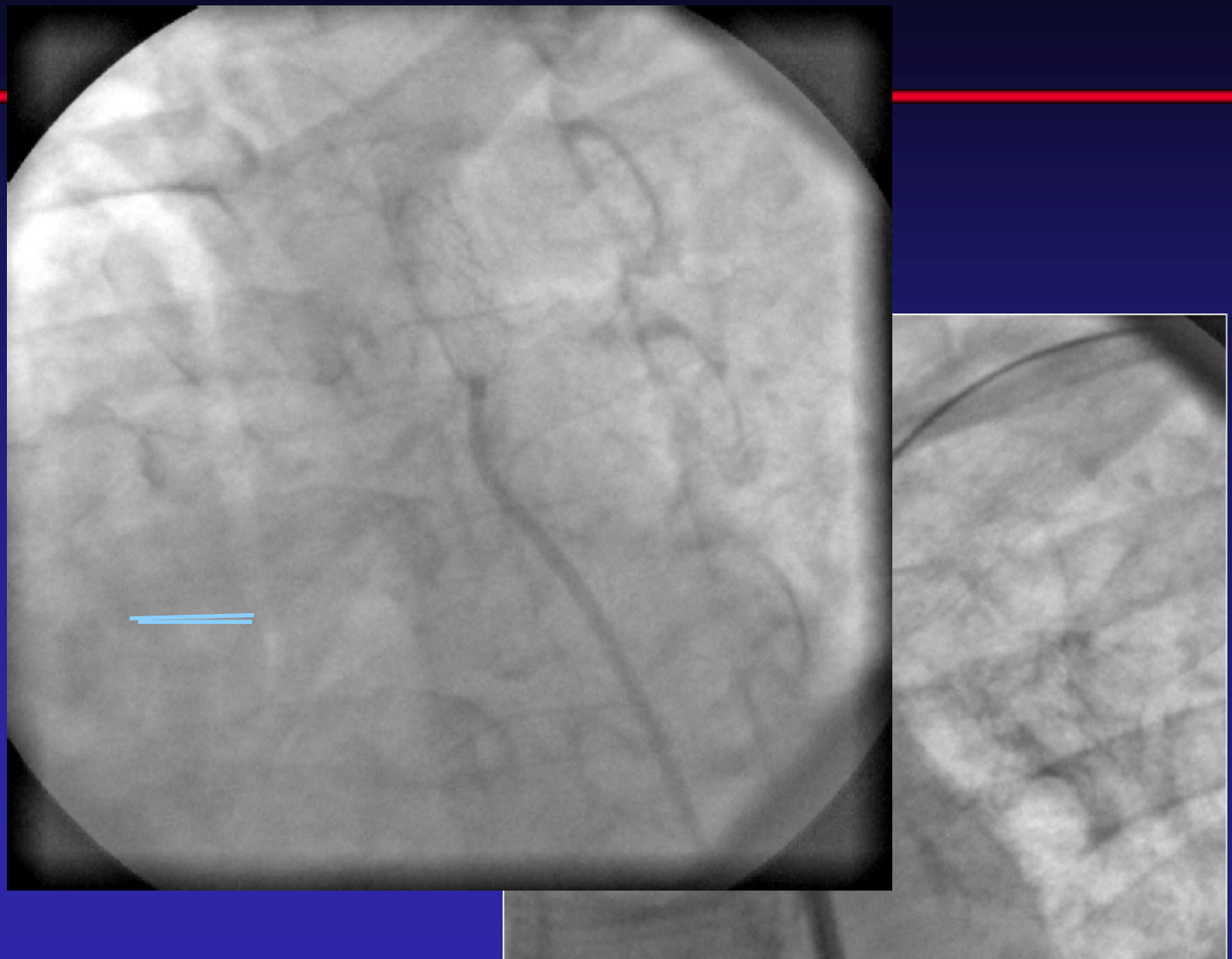
72 yrs-old woman with dizziness and vertigo. Numbness of L arm at night. Recent rotablator of the RCA.

BP R:140 L: 90 mmHg

Left Subclavian Stenting



Restenosis



Emergency Intervention

81 yr old admitted with NSTEMI, pulmonary edema and then developed severe hypotension, transferred for emergency intervention on Levophed

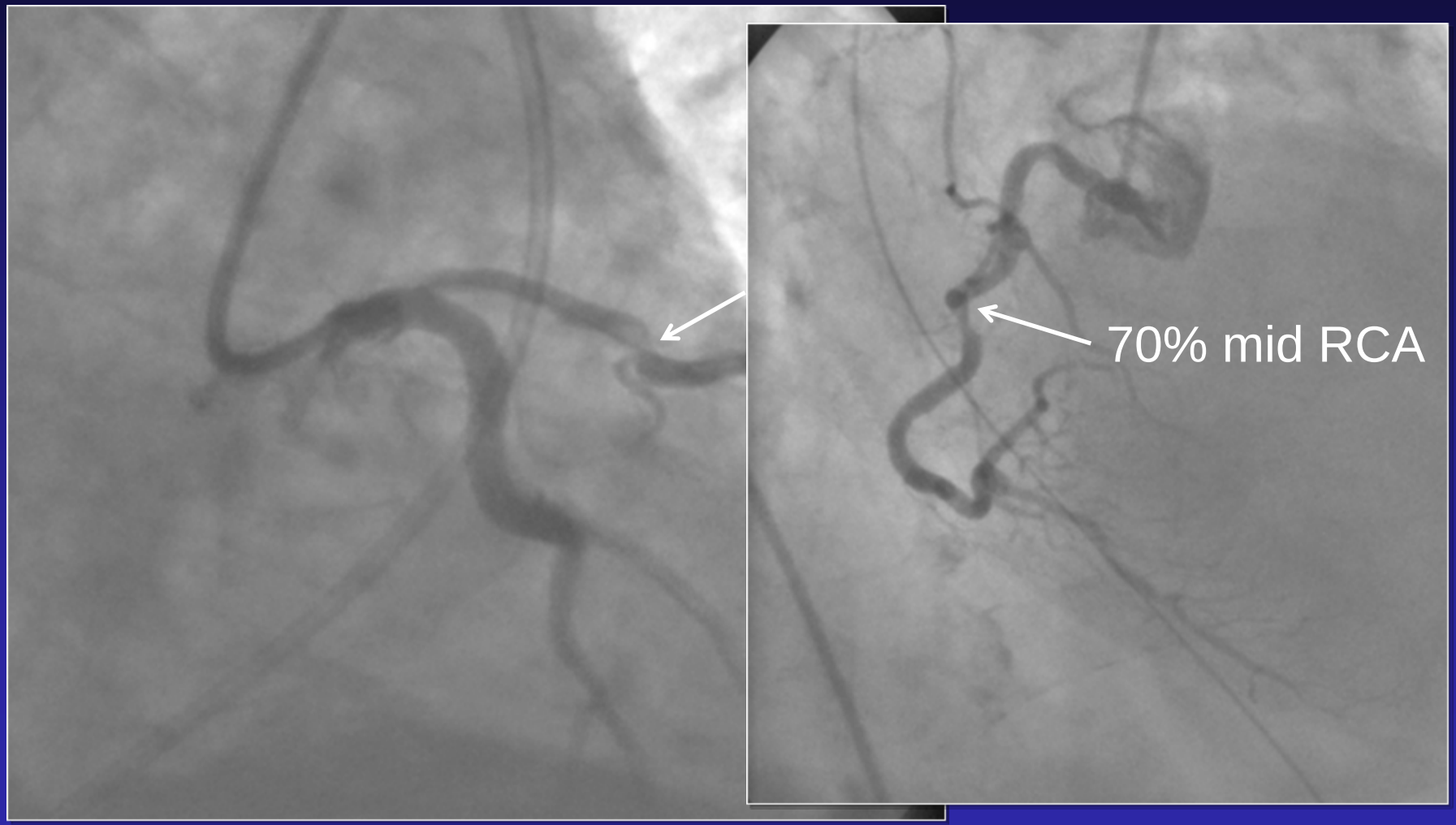
PICC Line in R antecubital vein. L arm BP 80/60

H/O PVD, but strong femoral pulses

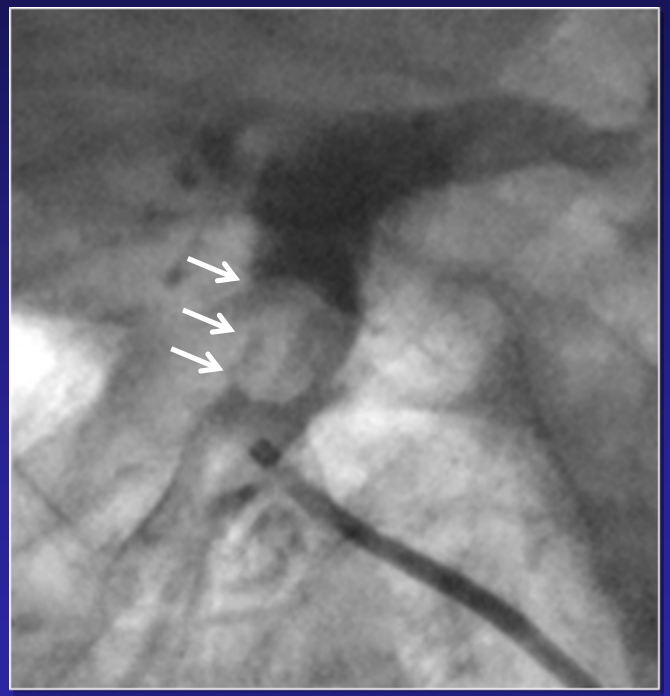
Comfortable in NAD on arrival to the Cath Lab

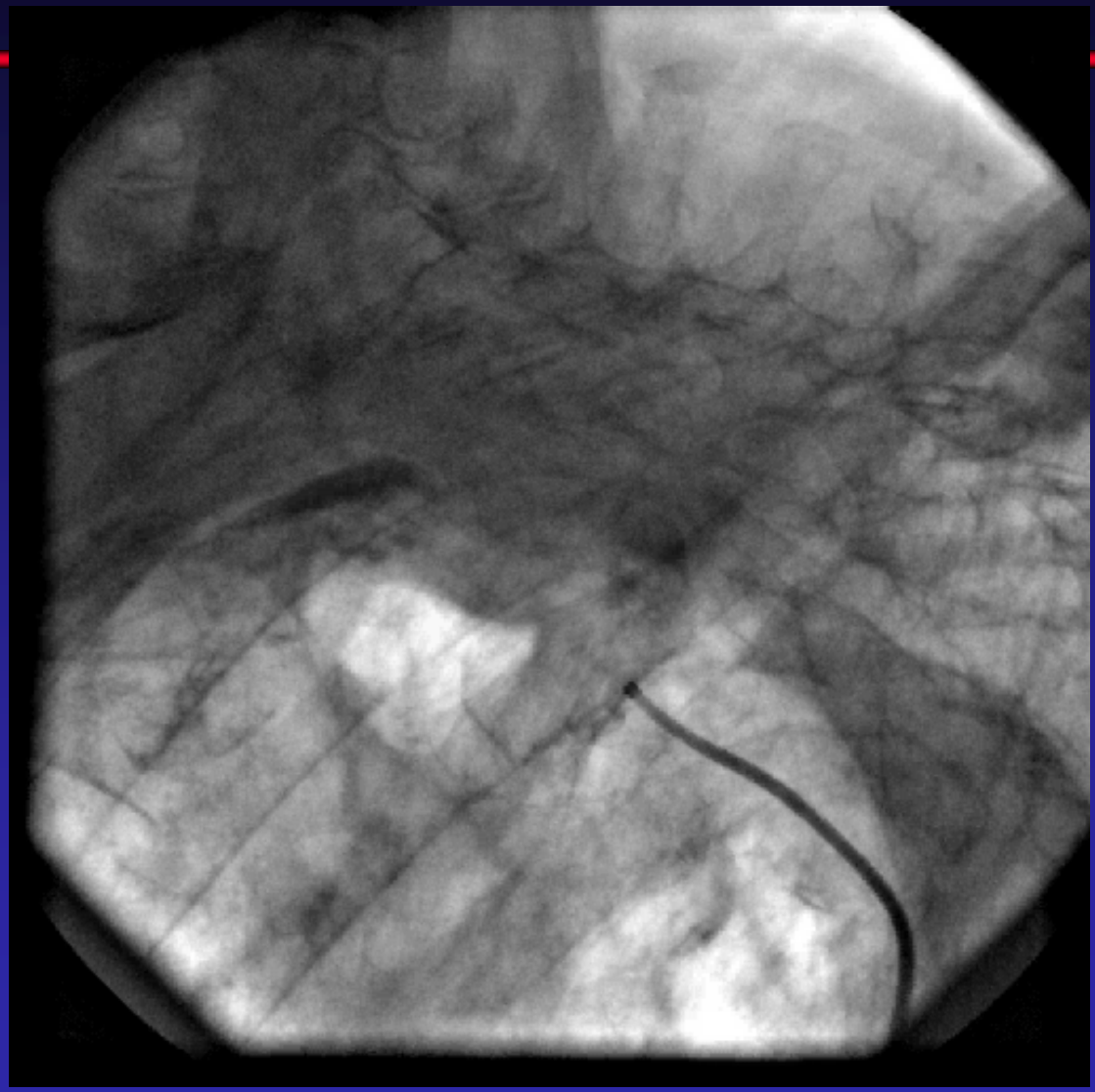
Access R groin, opening AO pressure 160.

ANGIOS



L Subclavian angiogram

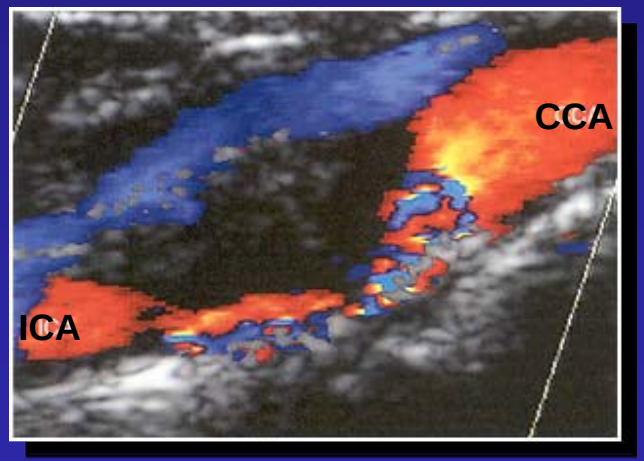


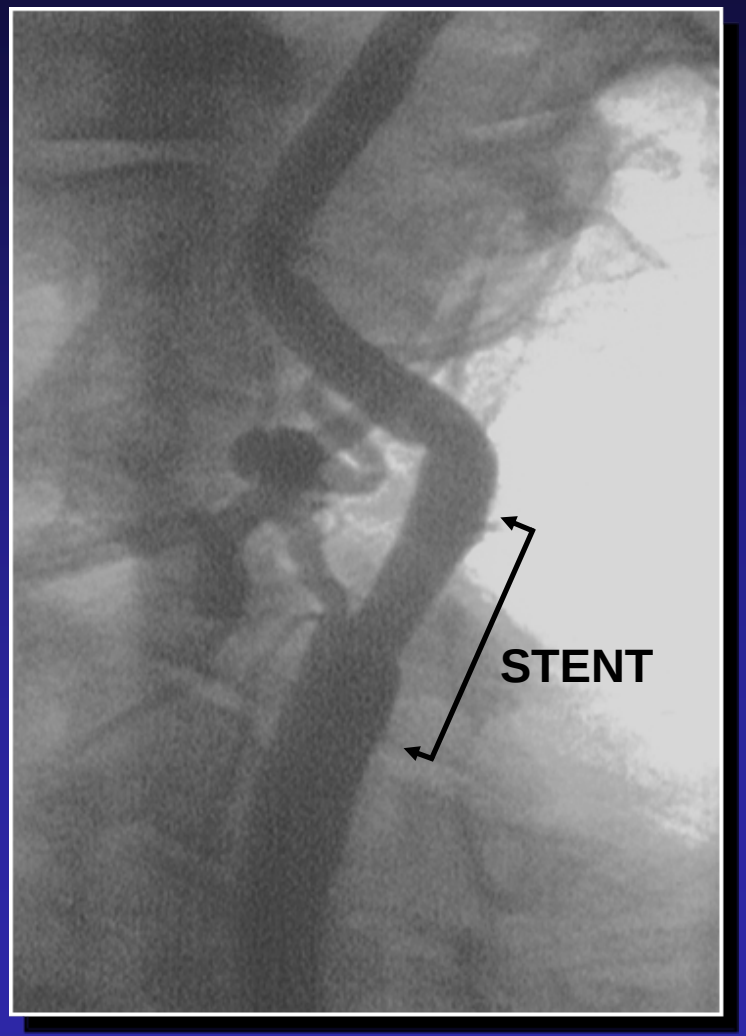


After stenting

Carotid Artery Disease

- Duplex U/S is screening test of choice and carotid angiography is gold standard
- Goal is to determine severity of stenosis and correspondent risk of CVA





CAROTID REVASCULARIZATION INDICATIONS

GOAL: STROKE PREVENTION (BENEFIT > RISK)

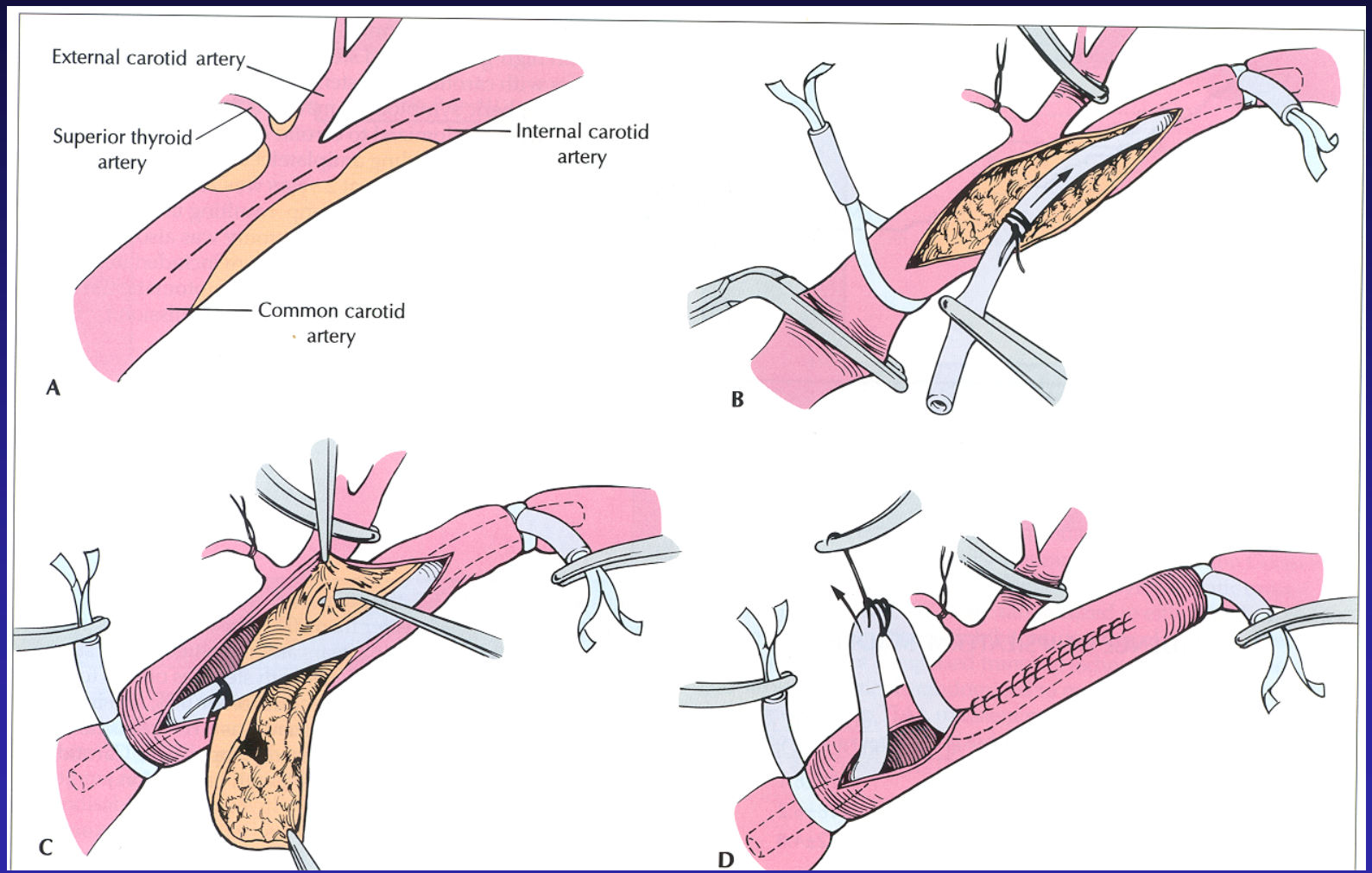
ASYMPTOMATIC: > 80%

If risk of surgery is less than 3%

SYMPTOMATIC: > 50%

If risk of surgery is less than 6%

Carotid Endarterectomy turned 55 yrs-old



Carotid Artery Stenting: INDICATIONS

FDA approved CAS as an alternative to CAE in patients at high risk for surgery

ANATOMICAL:

- Lesions too high or too low
- Tandem lesions
- Contralateral occlusion or stenosis
- Restenosis post CAE
- Post radiation or radical neck surgery
- Neck too short, C-spine immobility
- Contralateral laryngeal nerve palsy

Carotid Artery Stenting: INDICATIONS

COMORBIDITIES:

- Older than 75
- CHF class III or IV
- EF less than 30%
- USA or recent MI
- Severe COPD
- Cardiac disease requiring surgery within 6 weeks
- Severe CAD (2 lesions > 70% stenosis or abn. stress test in 2 territories or large defect)
- Renal failure requiring dialysis.

Restenosis?

Both at similar rates: 5-8%
In part operator and technique dependent

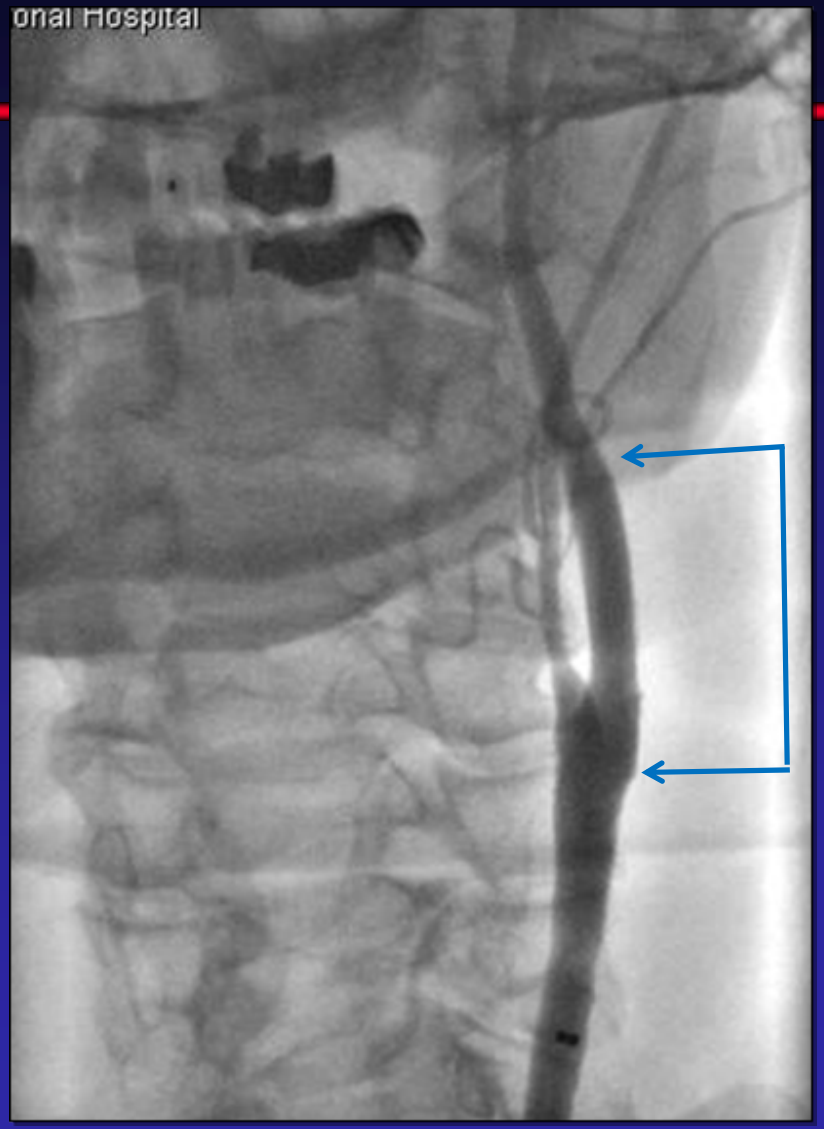
60 yr old with h/o neck radiation for cancer 7 years earlier

R ICA

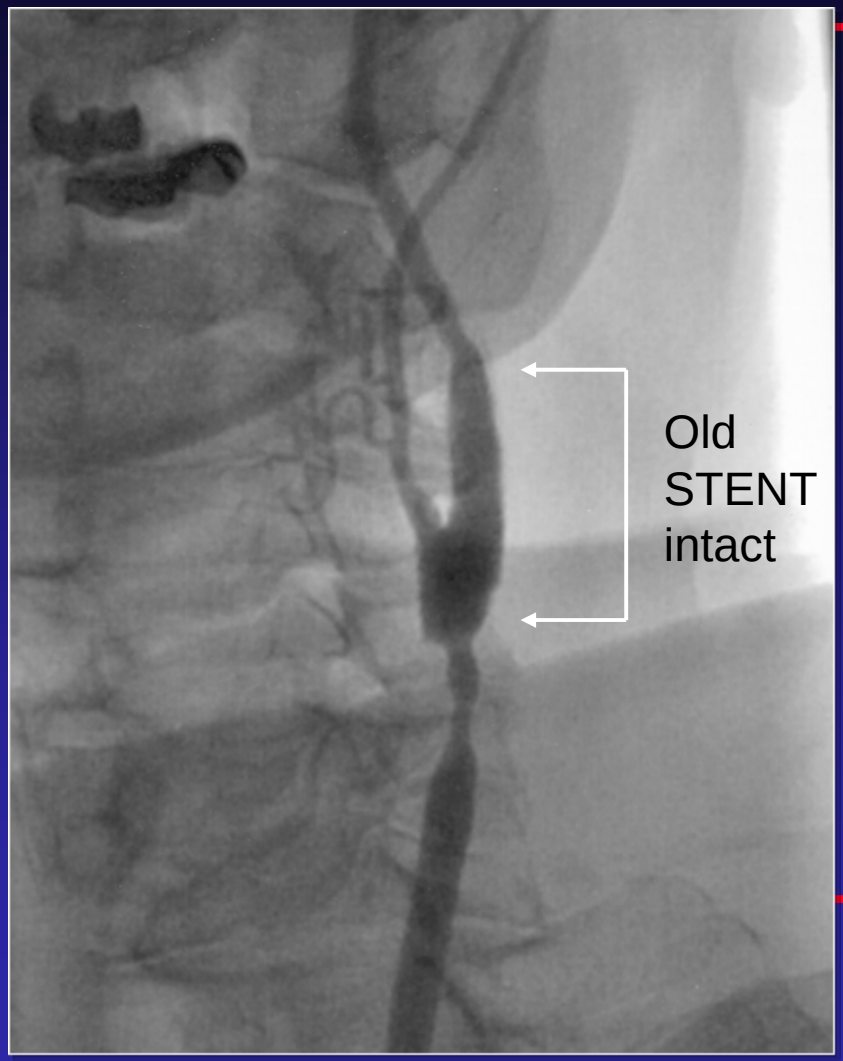
L ICA

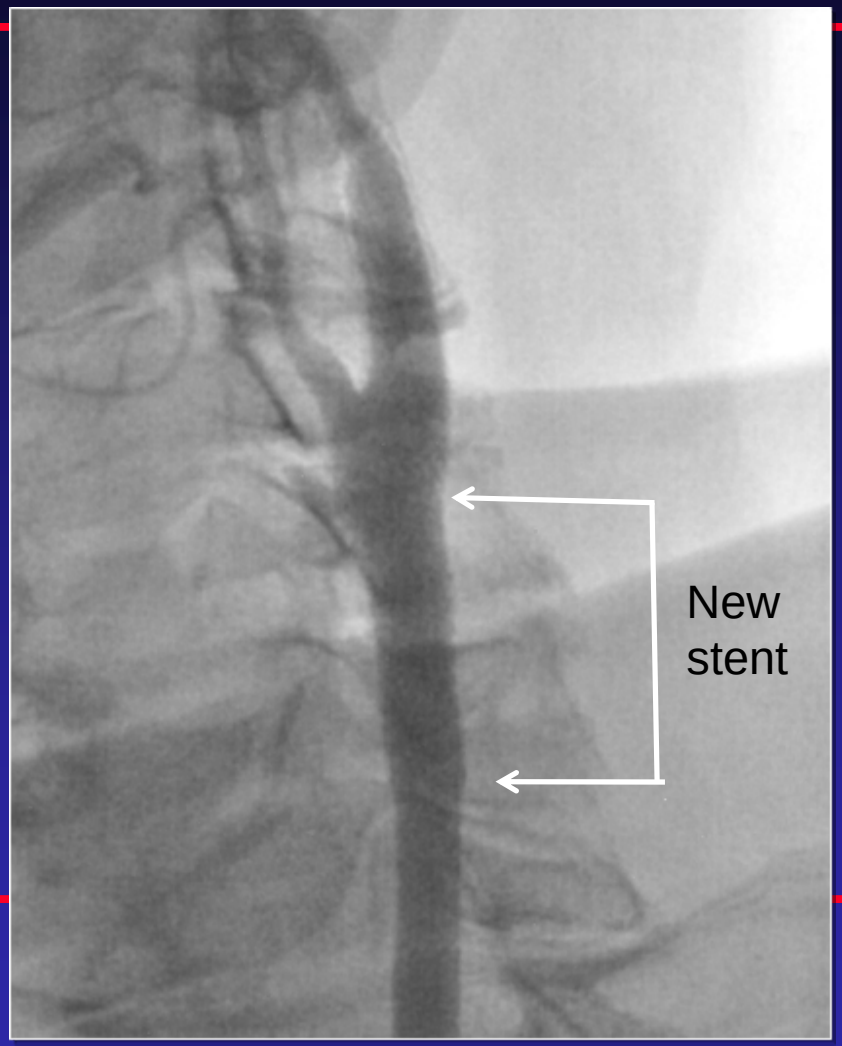
After Stenting…

Followed by serial U/S. After 18 months referred back for restenosis



Restenosis after 18 months





Renal Artery Stenosis

Underdiagnosed

Progressive disease

Causes HTN and ischemic renal atrophy

Dx: Duplex scan

Captopril renogram

MRA/CTA

Arteriogram

Tx: stenting (except FMD)

Clinical Clues

New onset HTN (<30, >50)

Refractory HTN (> 3 drugs)

Malignant HTN

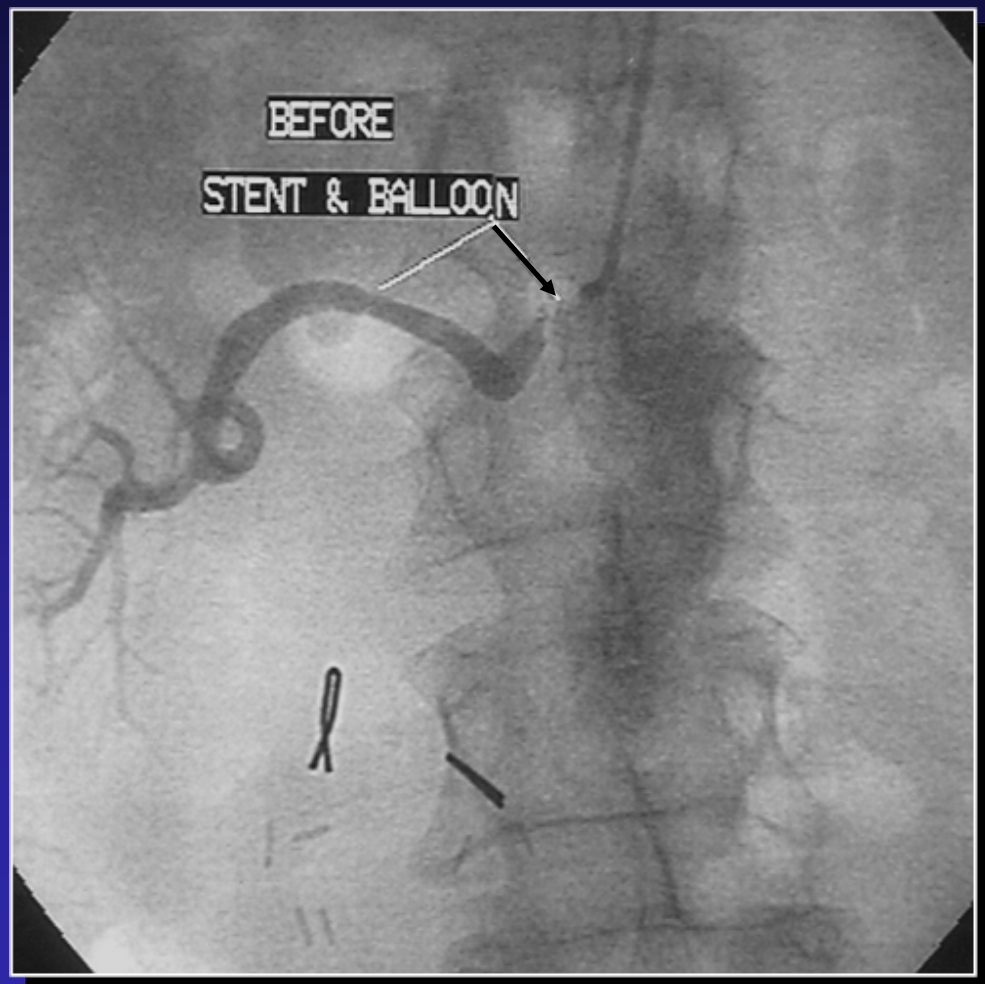
Unexplained renal insuff.

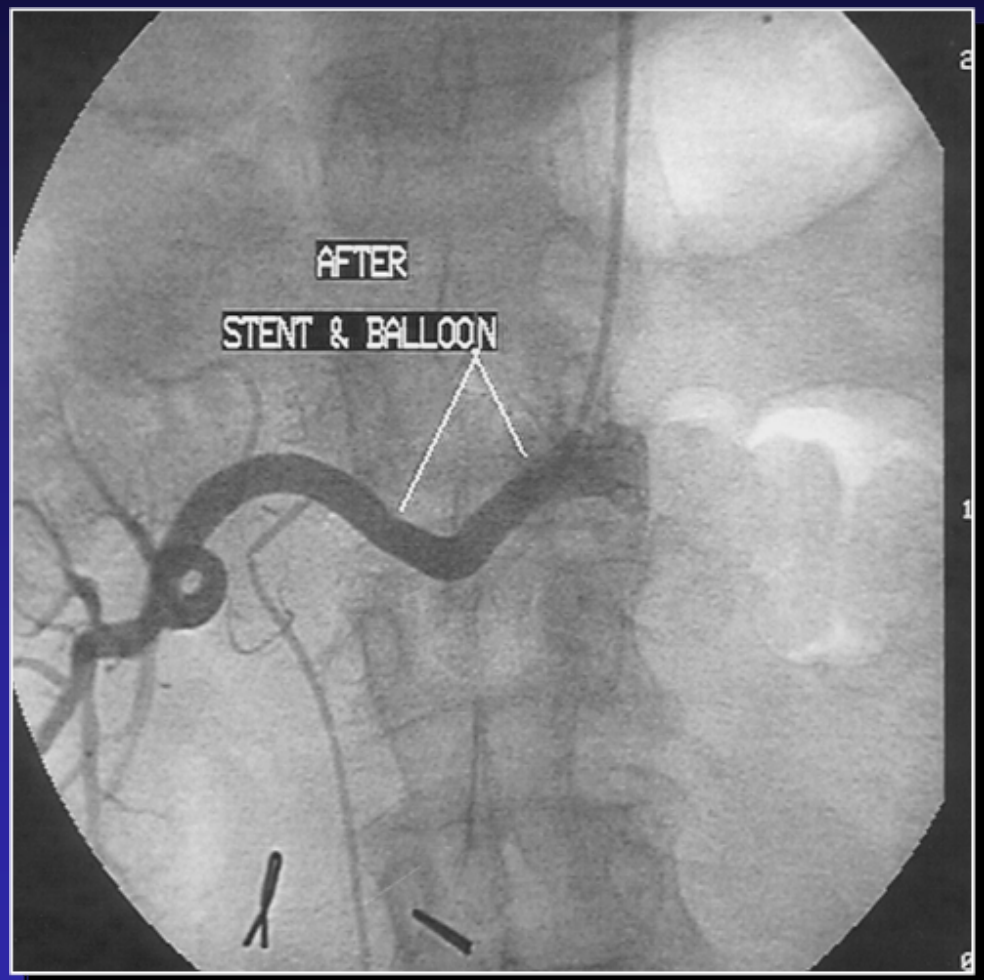
Azotemia due to ACE inhibitors

Asymmetry of kidney size

Underlying vascular disease (abdom bruits)

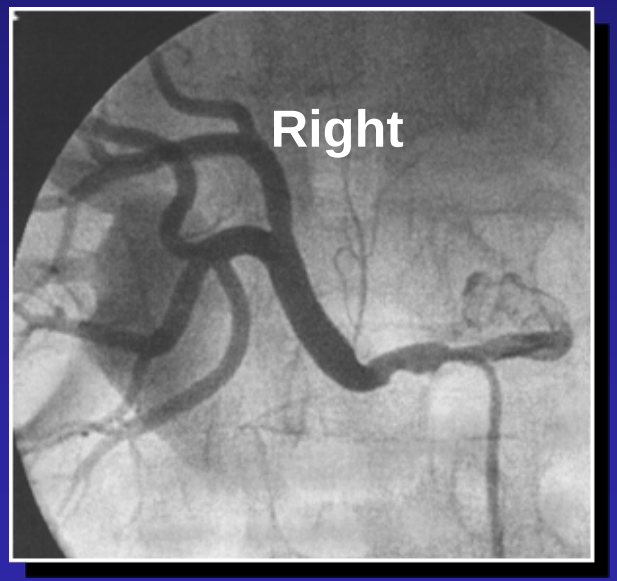
Renal artery stenosis

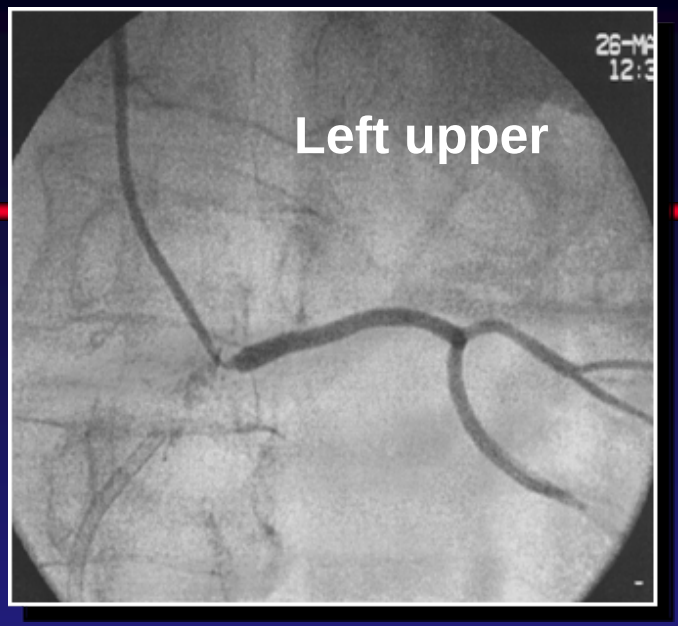


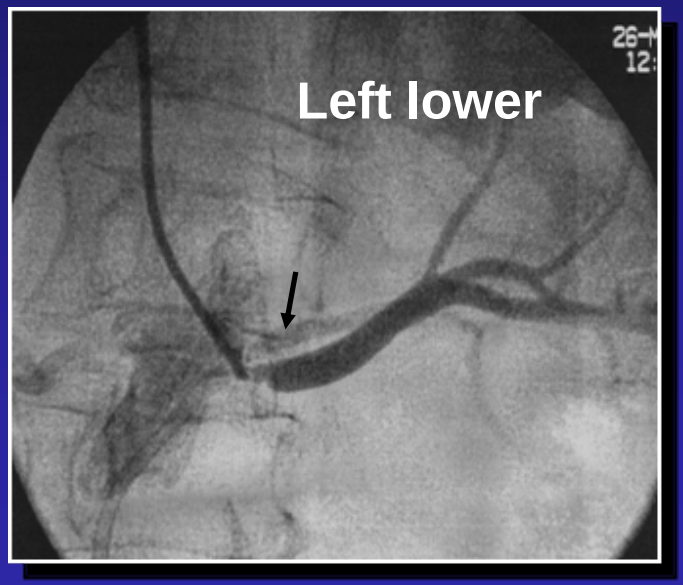


Bilateral Renal Artery Stenosis

78 yrs-old hispanic female with diabetes and multiple ER visits due to severe HTN. Developed USA, CHF and renal insuff (ACE inhibitors).

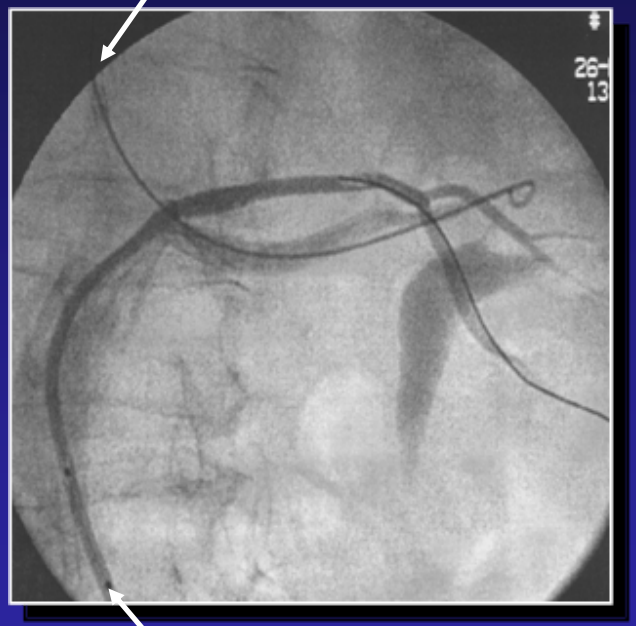




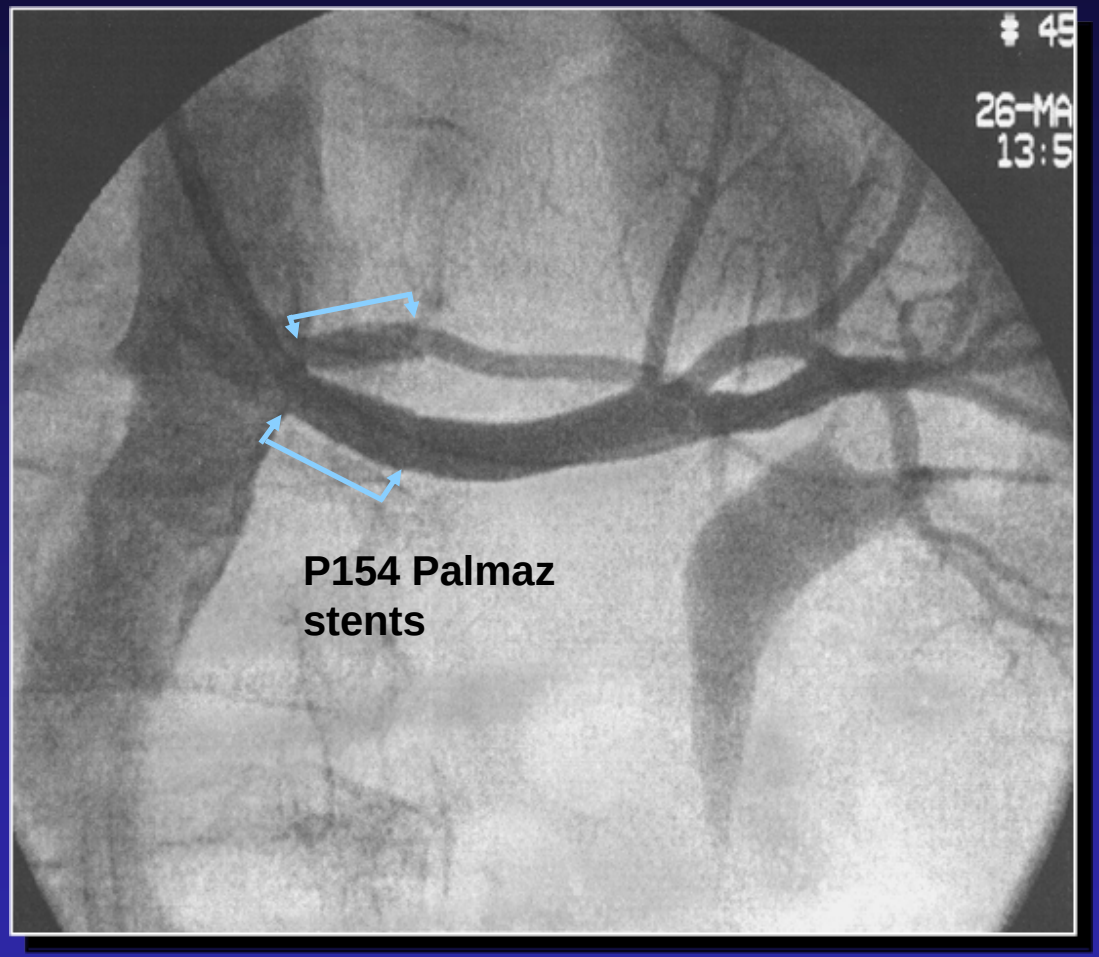


Kissing stent deployment on left

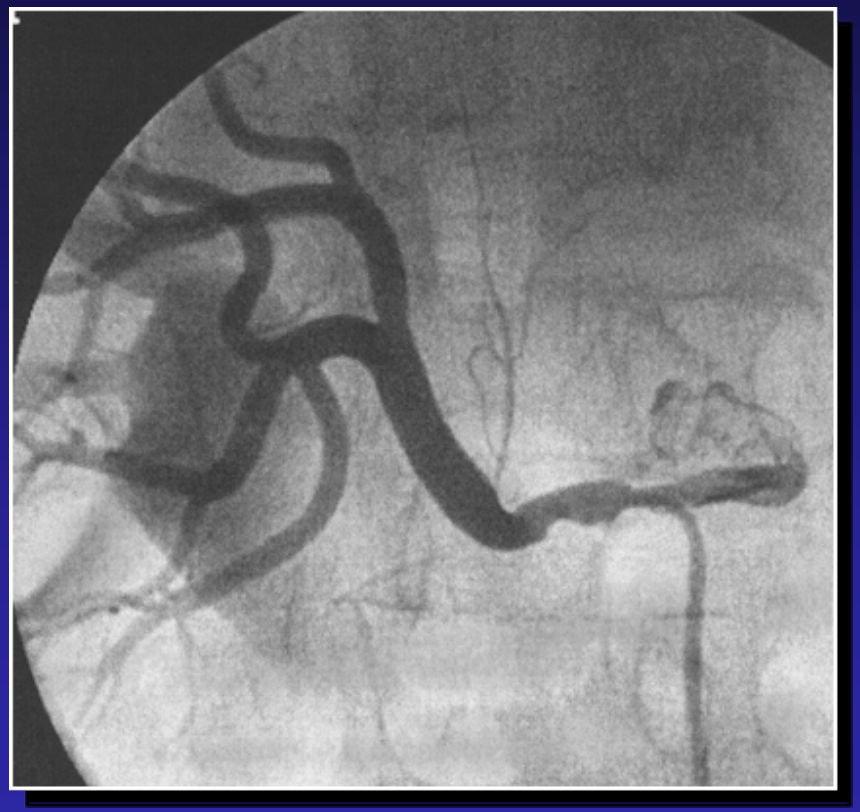
Arm access

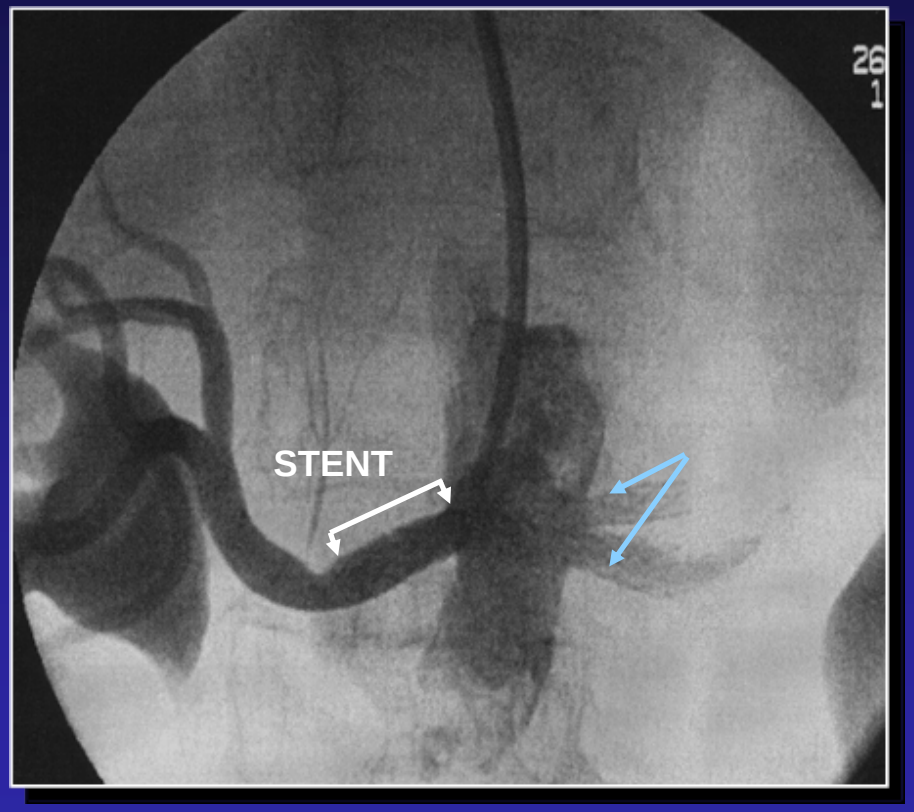


Groin access

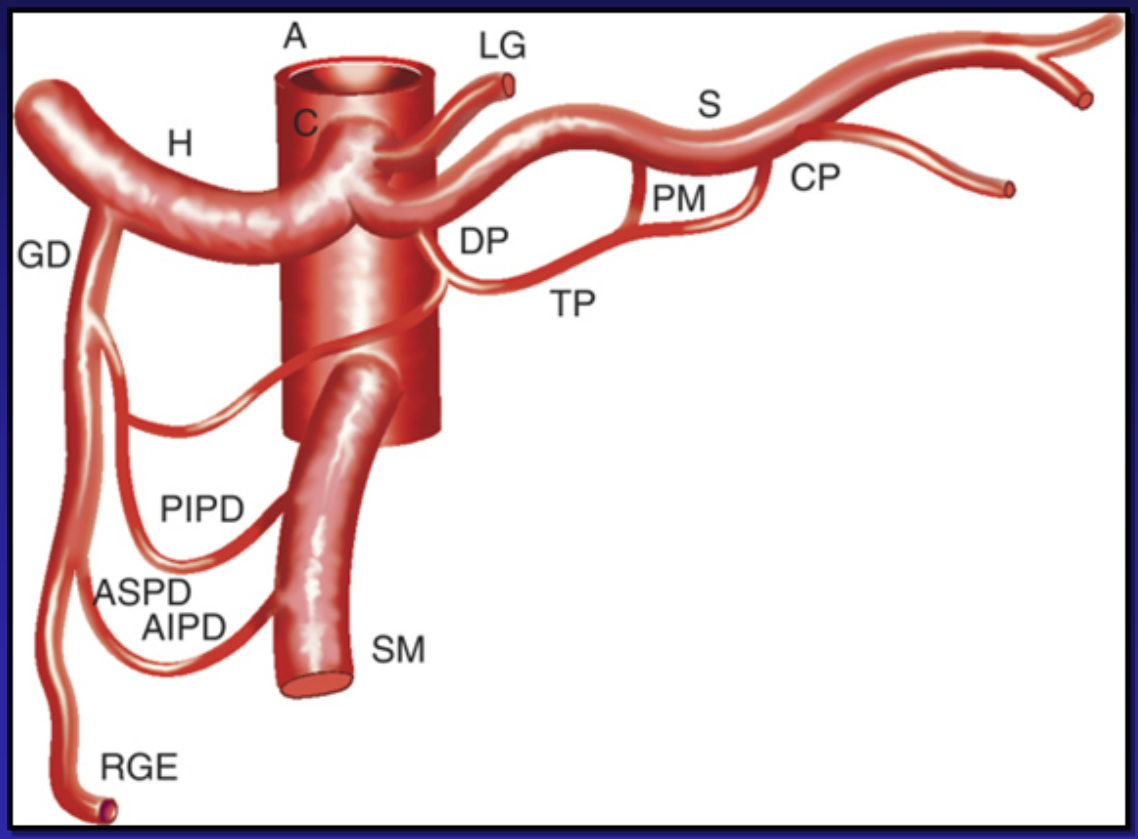


Right renal stent

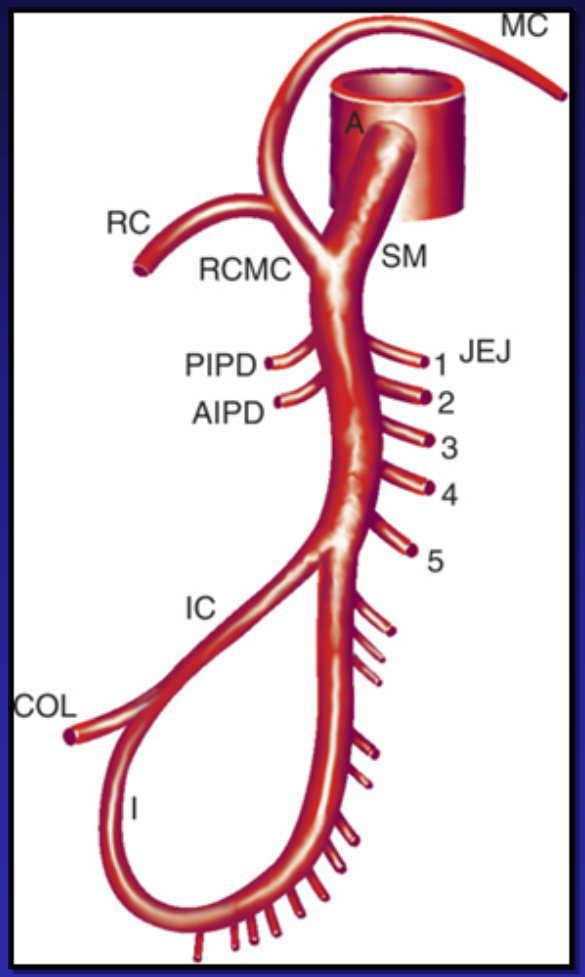


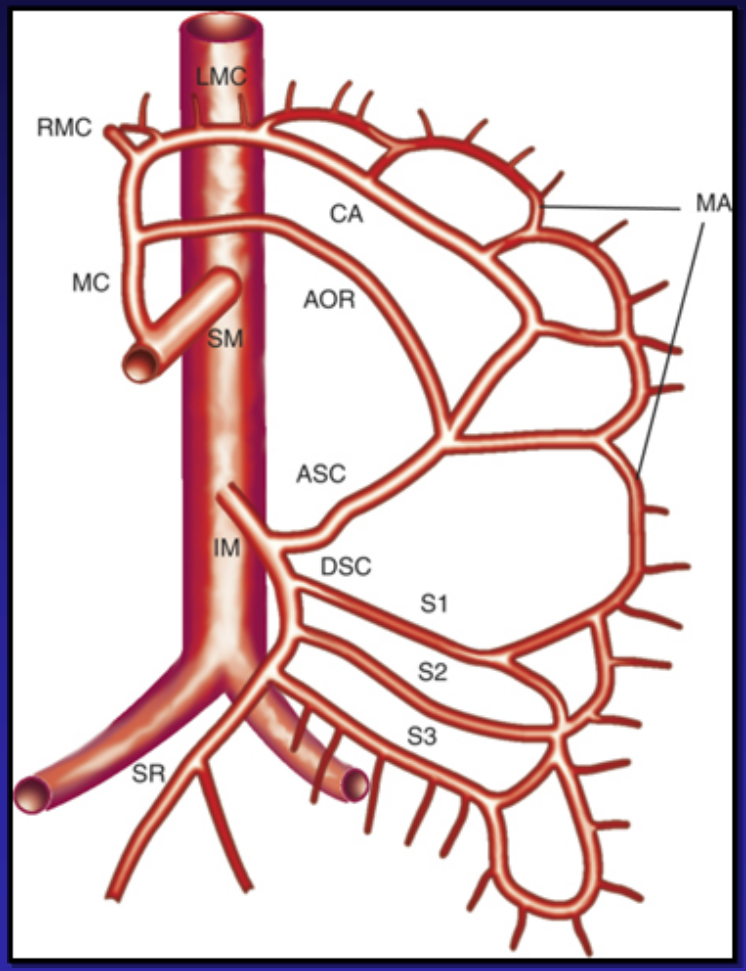


Mesenteric Circulation: Celiac Trunk



Mesenteric Circulation: SMA and IMA.





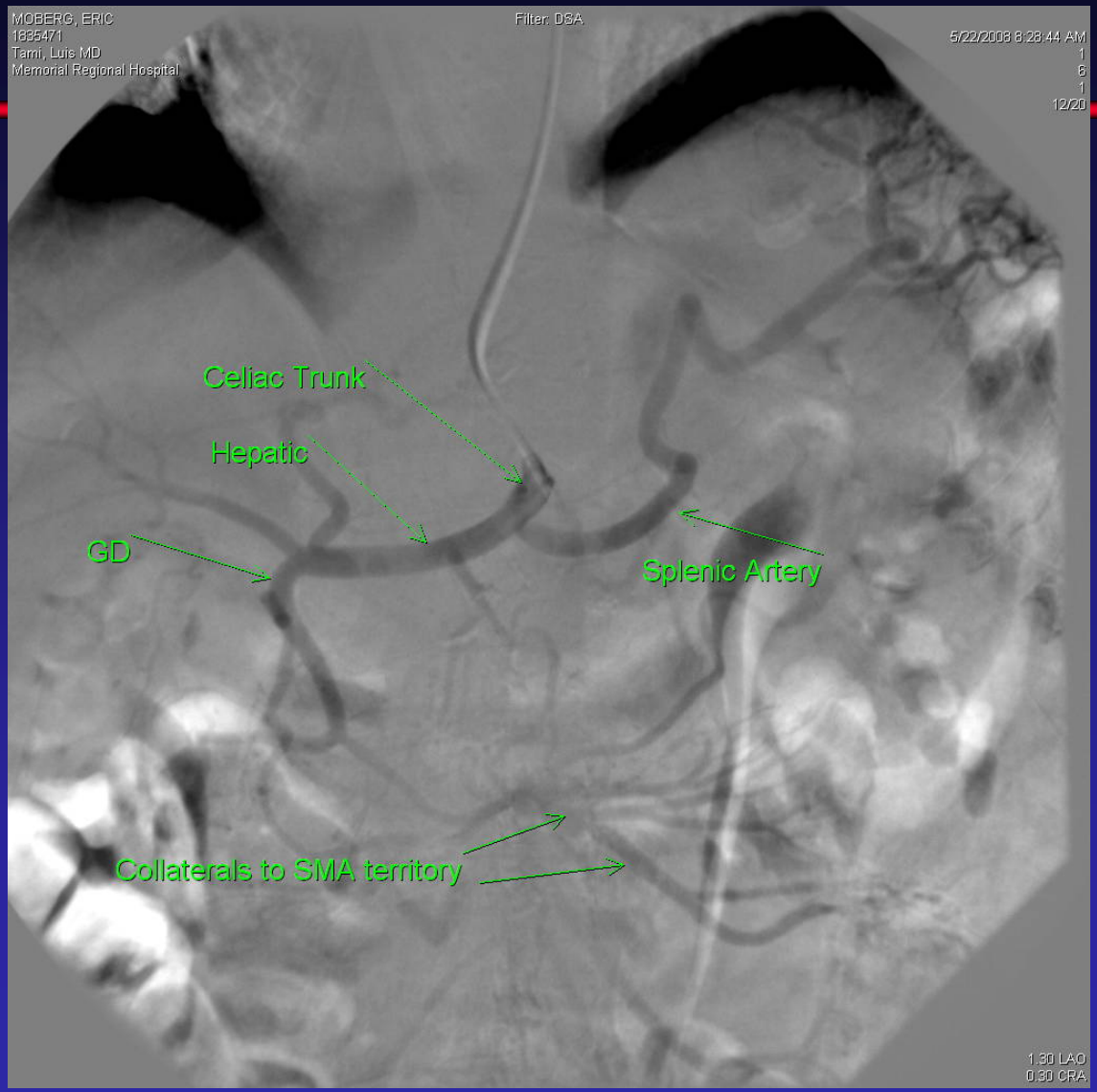
Chronic Mesenteric Ischemia

- 60 yr old with h/o smoking and claudication s/p bilateral iliac stenting several yrs ago
- Negative ACST
- Abdominal pain: Negative GI w/u
- Mesenteric Duplex and CTA one and a half year ago were normal
- Not much pain during a three month trip to NC. Again postprandial abdominal pain in FL
- CTA repeated: Negative again

- My own review of CTA: SMA stenosis
- Angio recommended

Celiac trunk

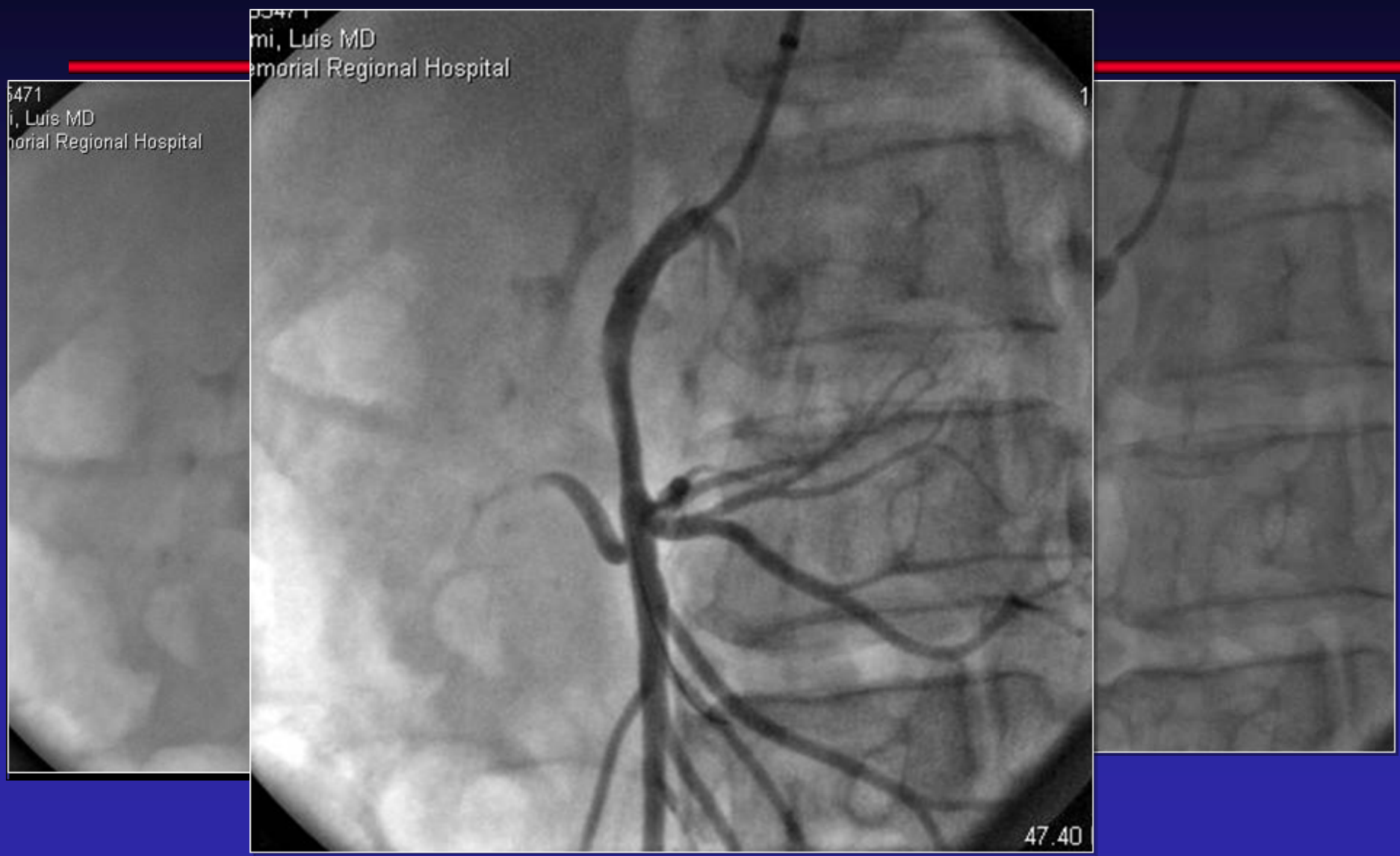
Celiac axis is patent collateralizes the SMA



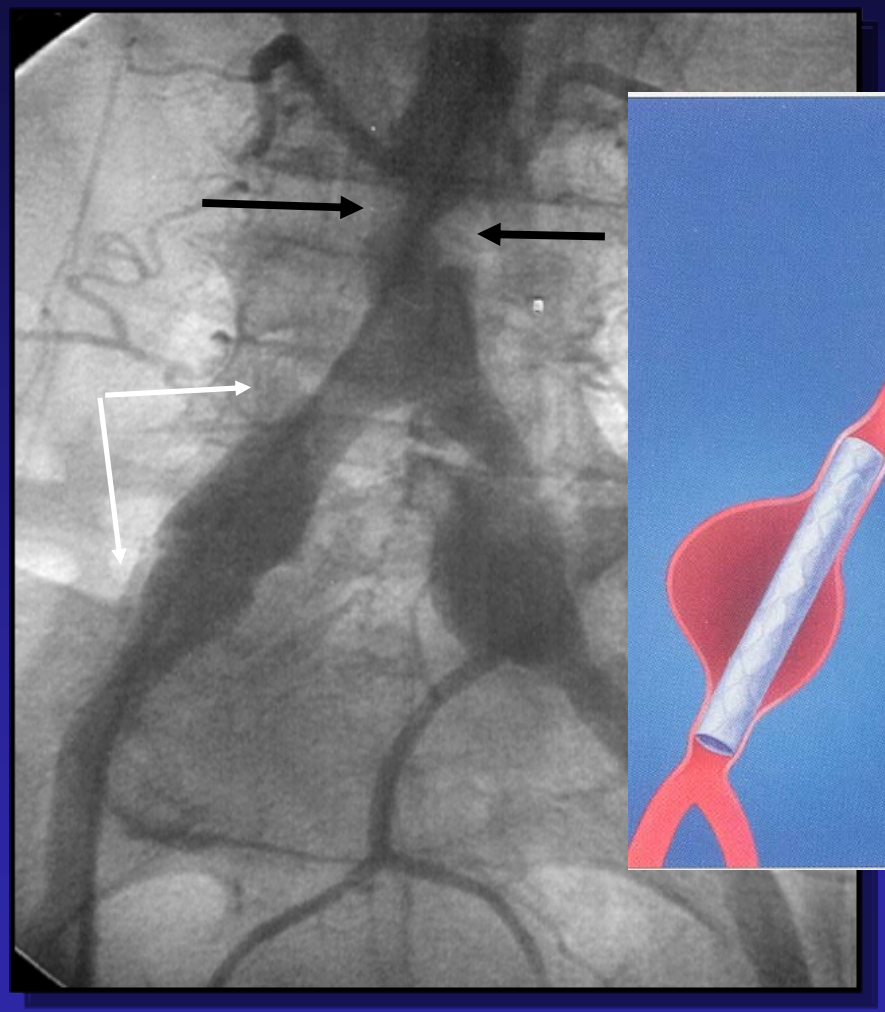
IMA

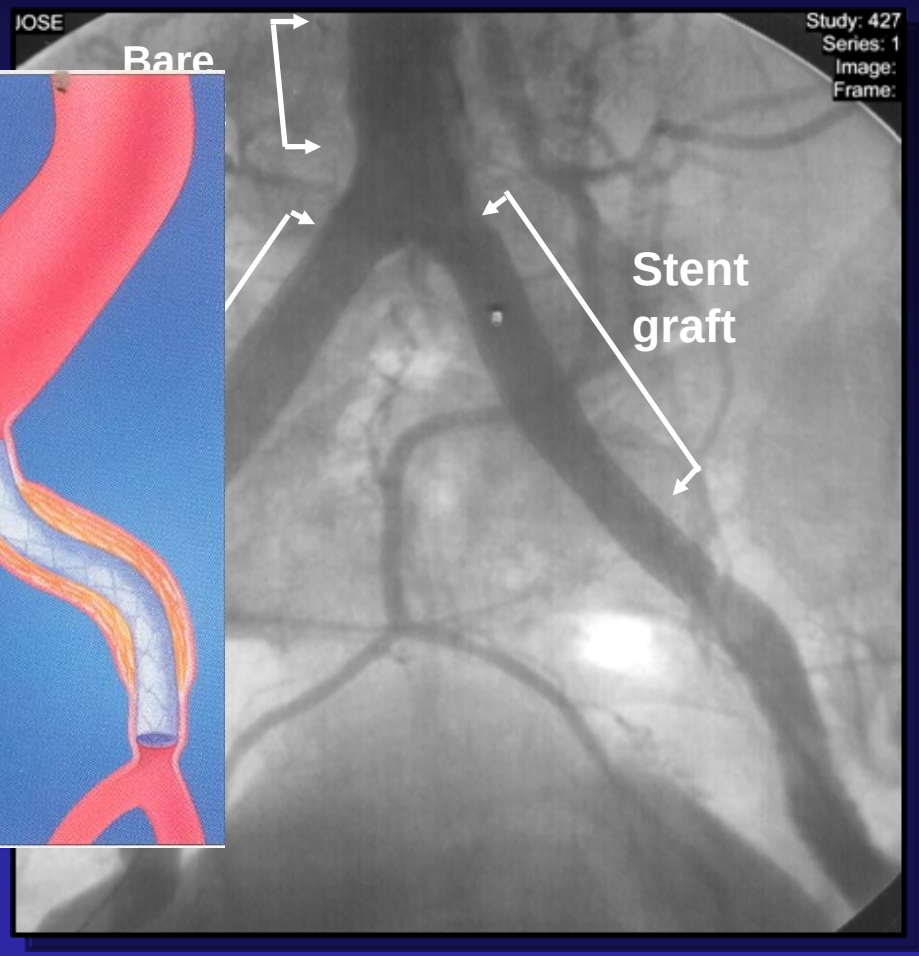
IMA is patent and small

SMA angio PRE

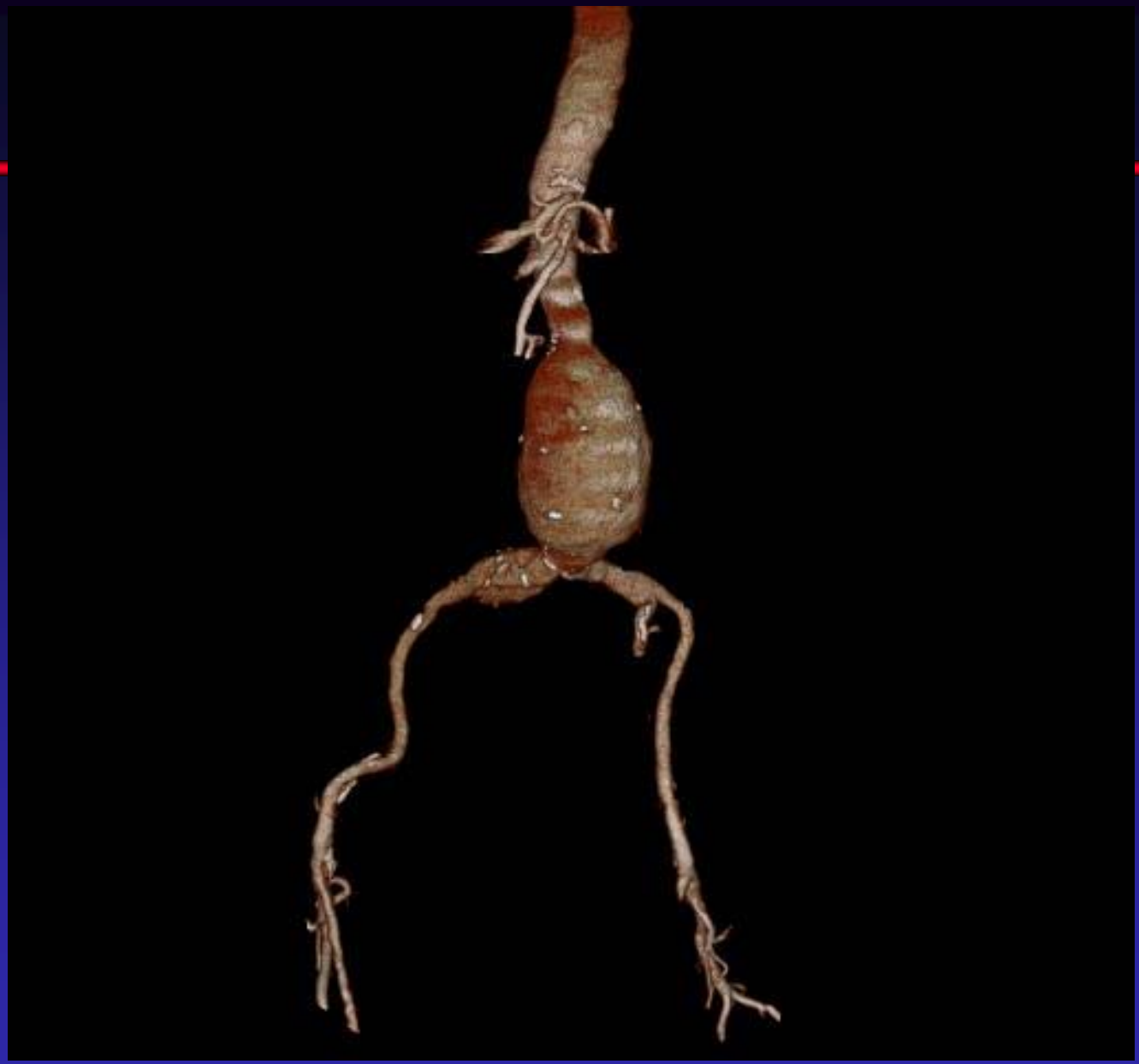

mi, Luis MD
emorial Regional Hospital
47.40

Stenosis of Aorta and Iliac Aneurysms





AAA
CTA 3D Reconstruction



AAA CTA 3D Reconstruction

AAA
After stent graft repair

Aortic Aneurysm Endografting

CASE 1

77 yrs-old presented with acute pulmonary edema and chest pain. Intubated.

PMHx: VBI symptoms one month earlier (w/u by a Vasc. Surgeon)

Cath: critical 3 v CAD. IABP. Poor C.O.

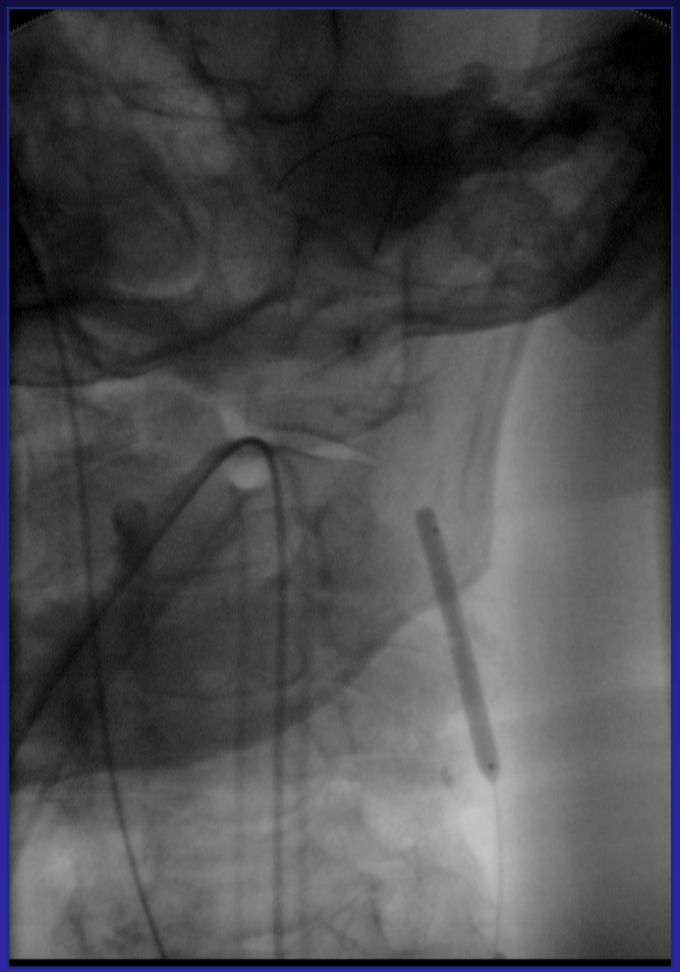
Carotid angio: 80% R ICA, 95% L ICA, occluded L vert, 90% R vert.

Bilat renal artery stenosis.

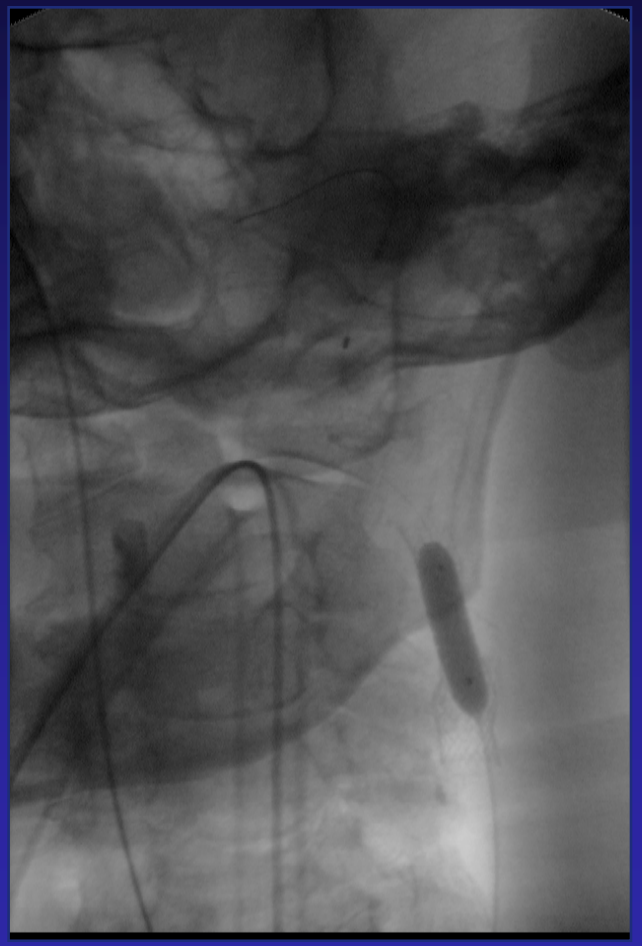
Left Carotid

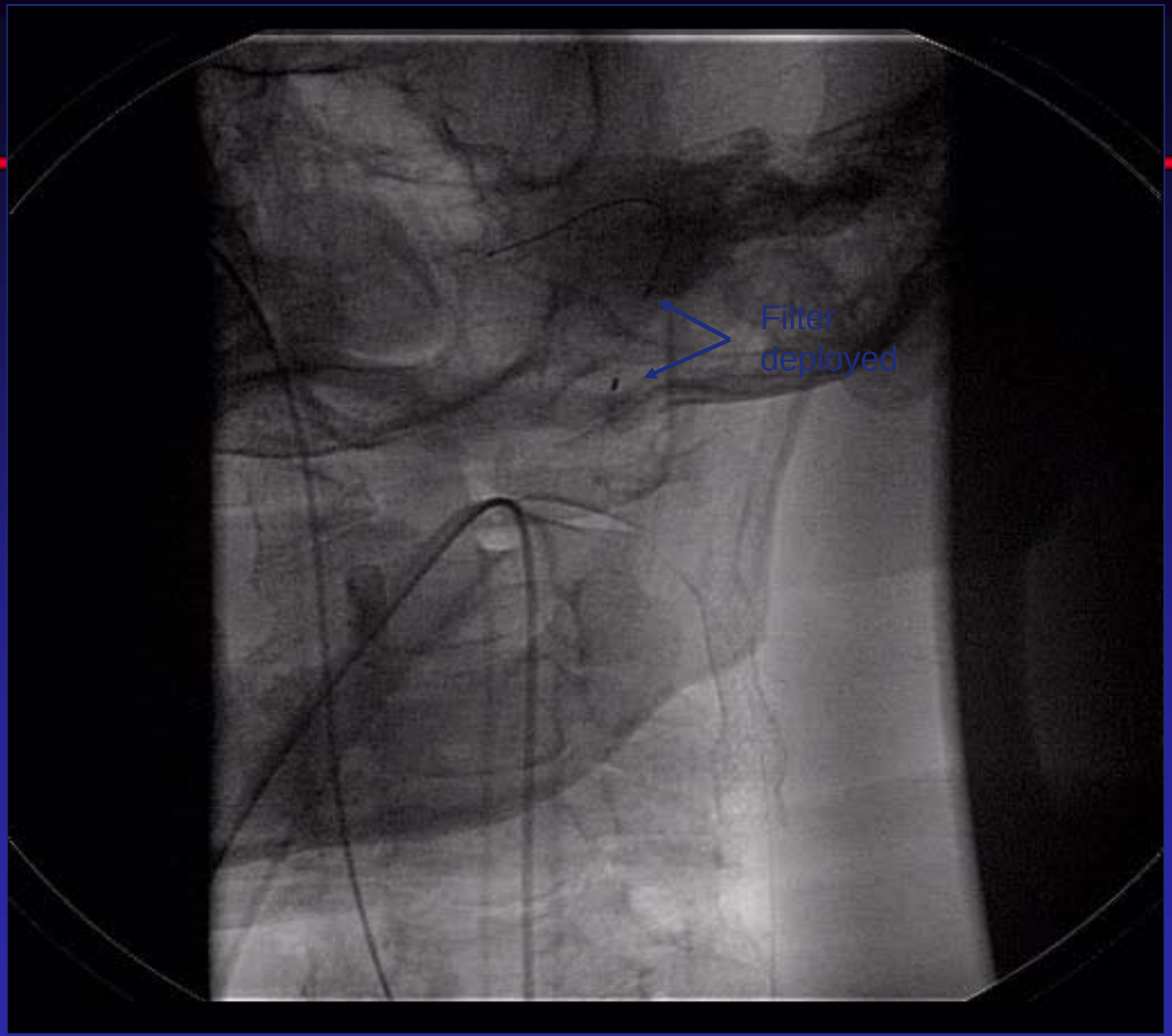
Ulcerated 99% stenosis

Balloon predilatation
(4x40 mm)

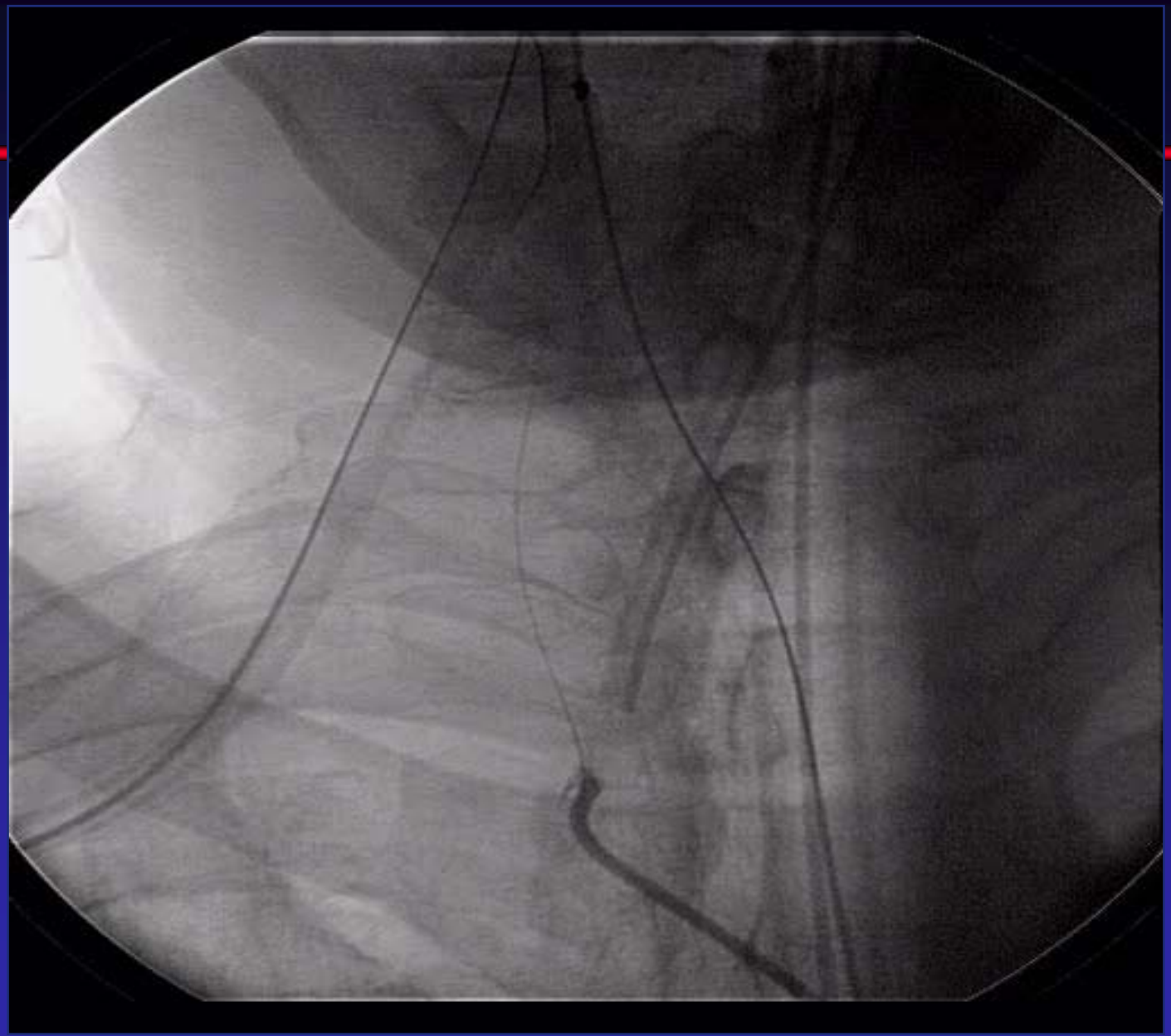


Balloon postdilatation
(5.5x20 mm)

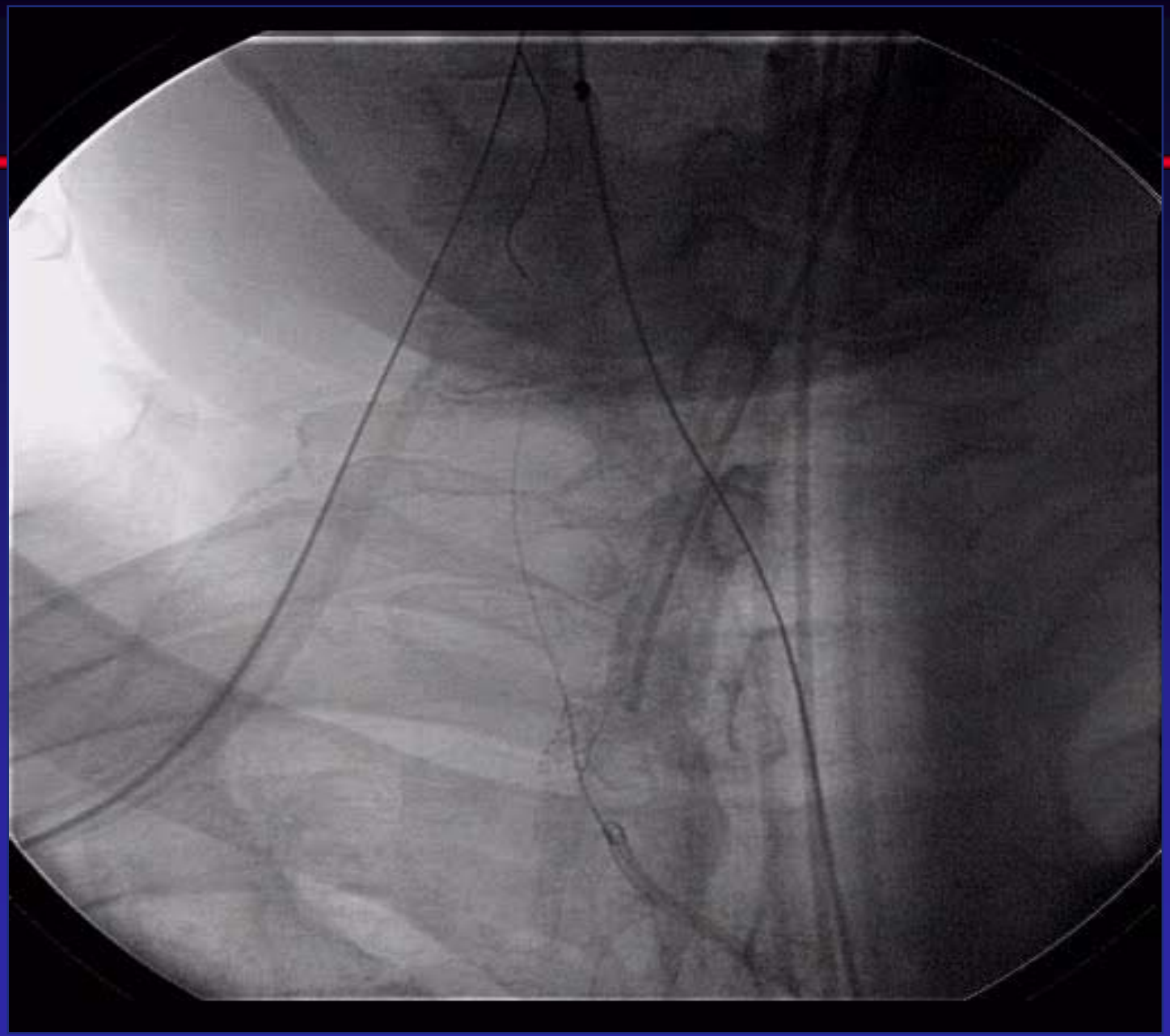




Left Carotid Stenting using AngioGuard Filter



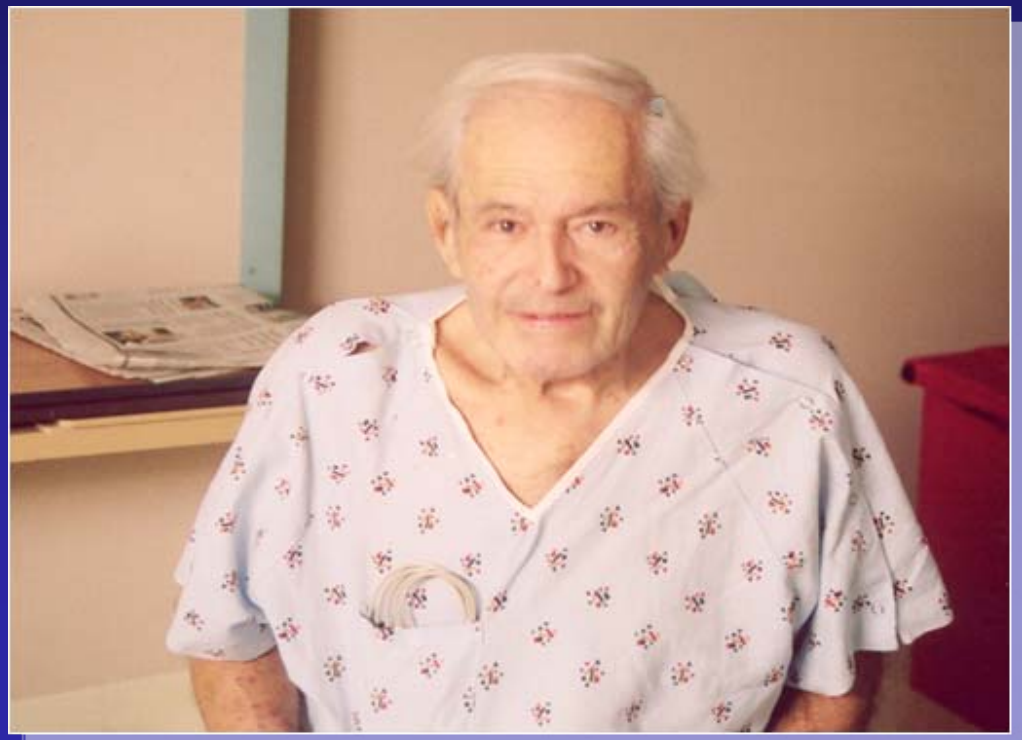
R Vertebral stenosis at ostium



R Vertebral Stenting

CASE 1

Carotid, vertebral and renal artery stenting done without complications. Few days later CABG done also successfully.

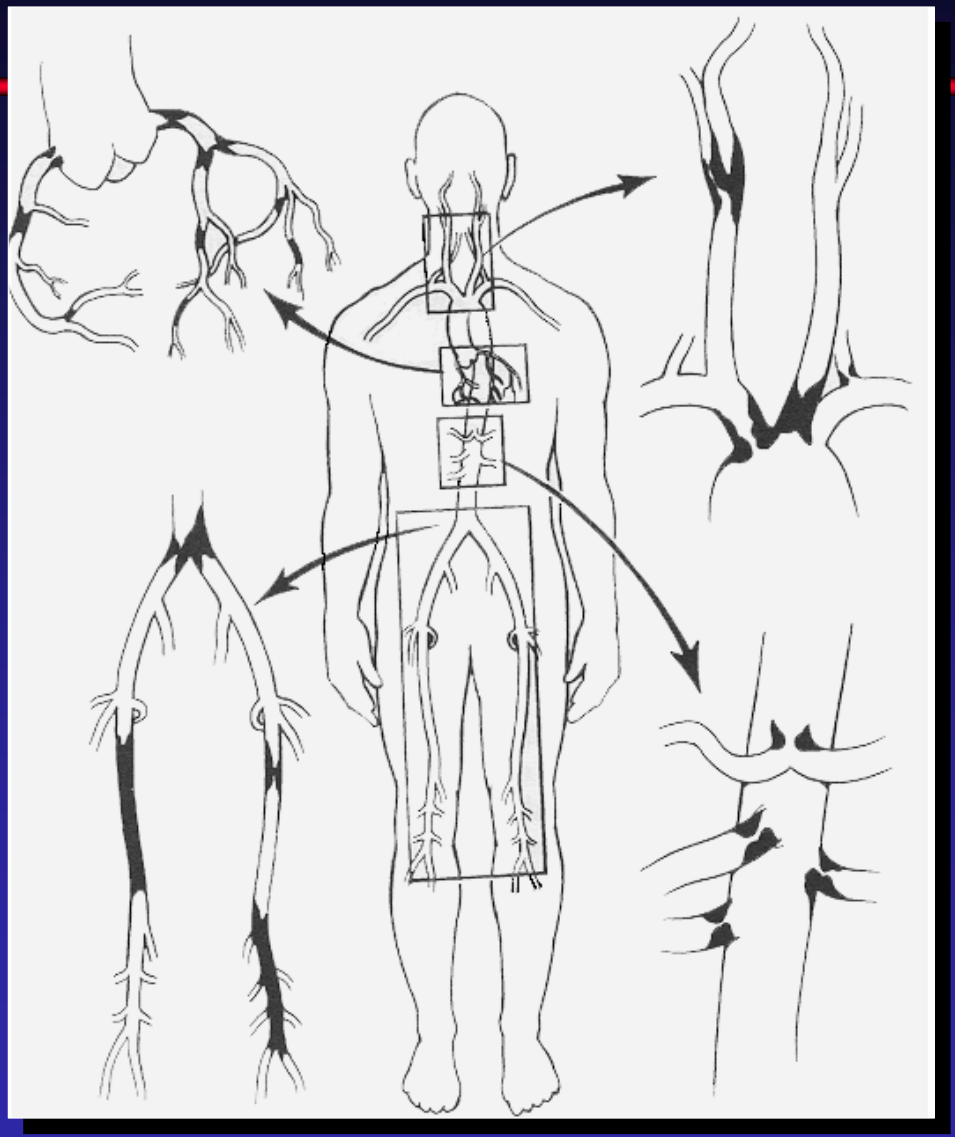


Endovascular Therapy

CAD

AAA

PVD



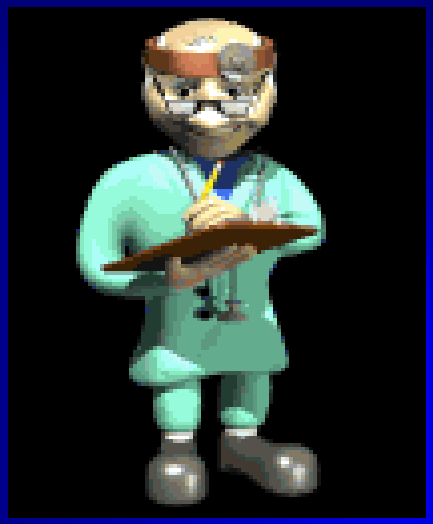
Carotid Disease

Subclavian steal

Renal Art. Disease

Mesenteric Art Disease

Patient Preference



Although all of us love our surgeons,

NOBODY loves surgery!