Φλεβικές Παθήσεις

Venous Insufficiency – Varicose Veins – Deep Venous Thrombosis

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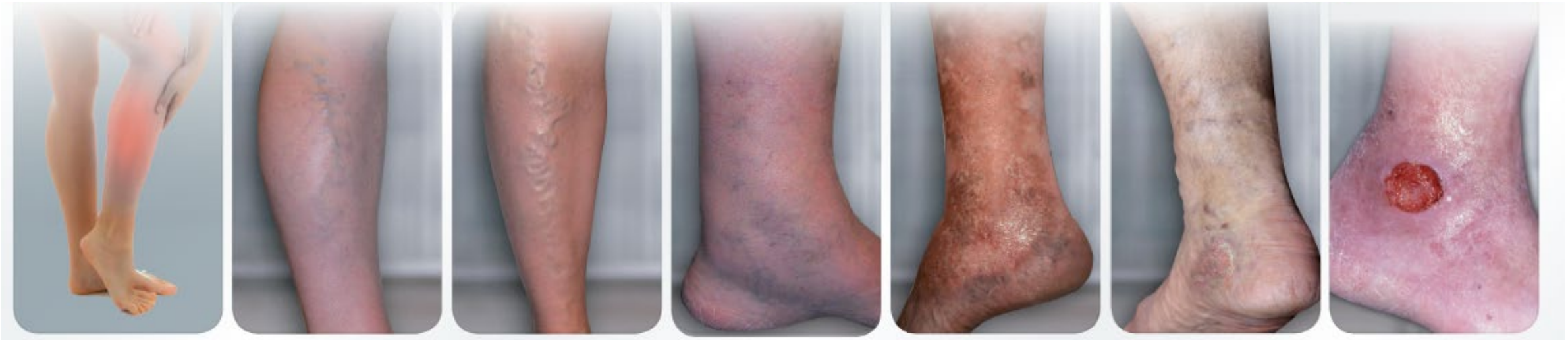
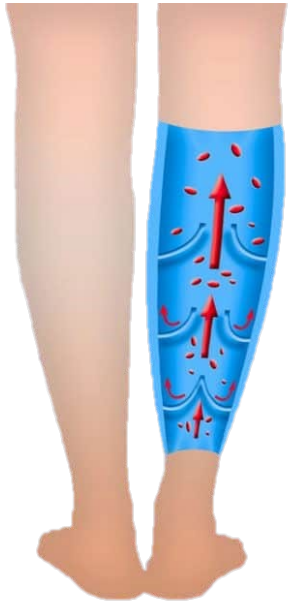


What is Venous Insufficieny?

Disorder involving stasis of blood in lower extremities as a result of venous obstruction and/or reflux (primary or secondary) of venous valves…



42 year old female
Retail sales

My legs swell, I feel them heavy and tired

35 year old female
Office worker

My legs burn, and I have cramps

55 year old male
Health professional

My legs get tired and heavy when I walk

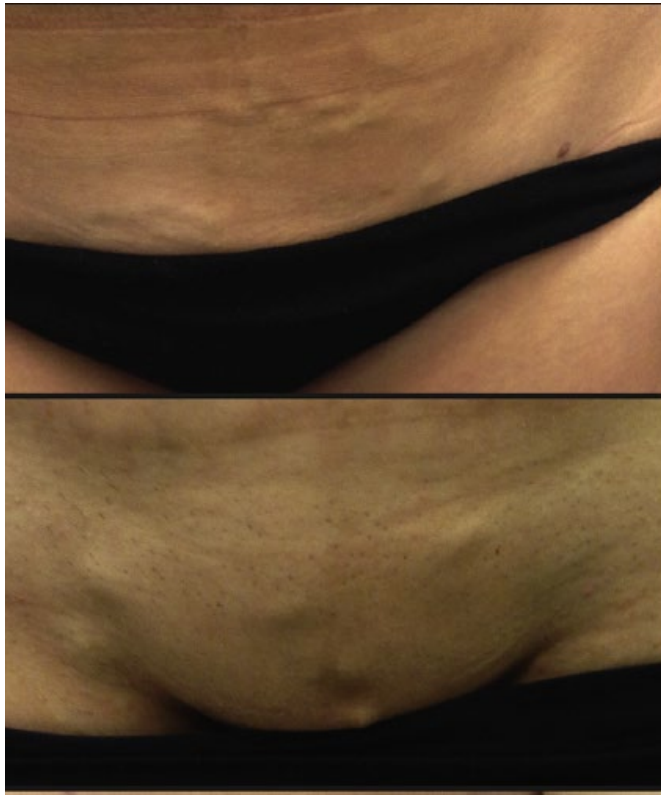
68 year old male
Retired

My legs have discoloration and I get ulcers on and off

«Spider Veins» - «Varicose Veins»

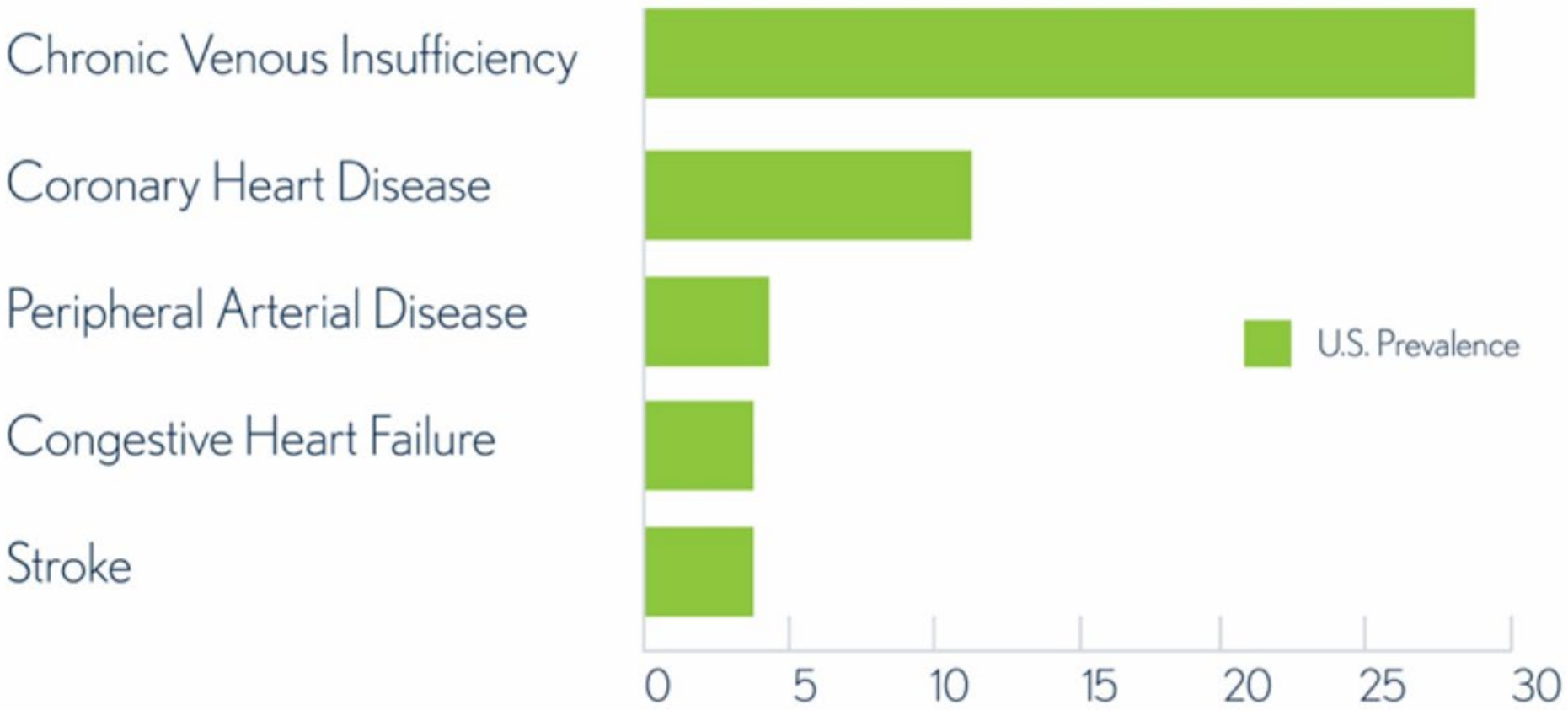
Pelvic Disease/
Iliac Vein Stenosis

Post-thrombotic
Syndrome



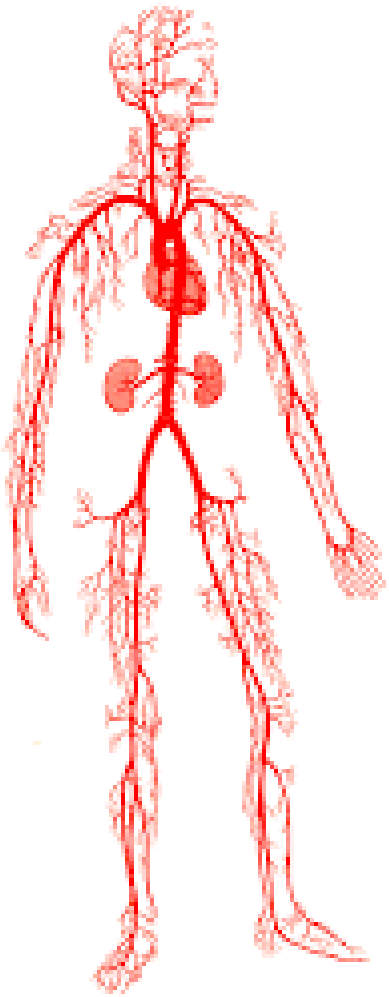
Pelvic Congestion

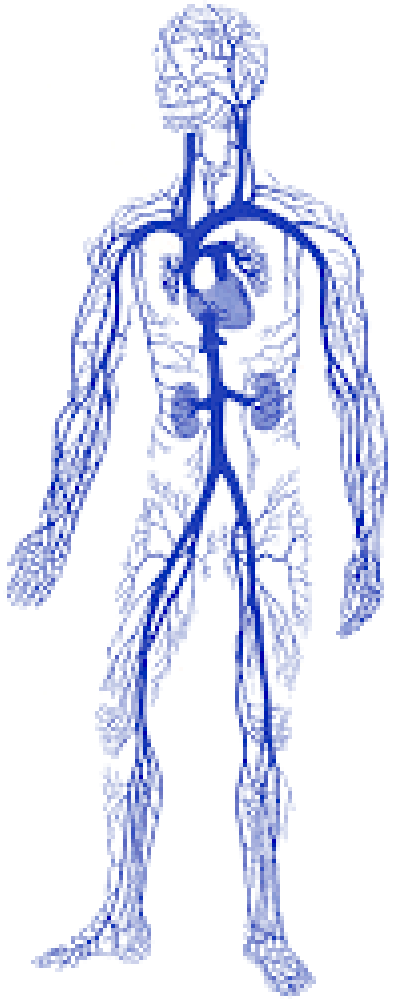
Chronic Venous Insufficiency (CVI) is 2x more prevalent than Coronary Heart Disease (CHD) and 5x more prevalent than Peripheral Arterial Disease (PAD)[1]

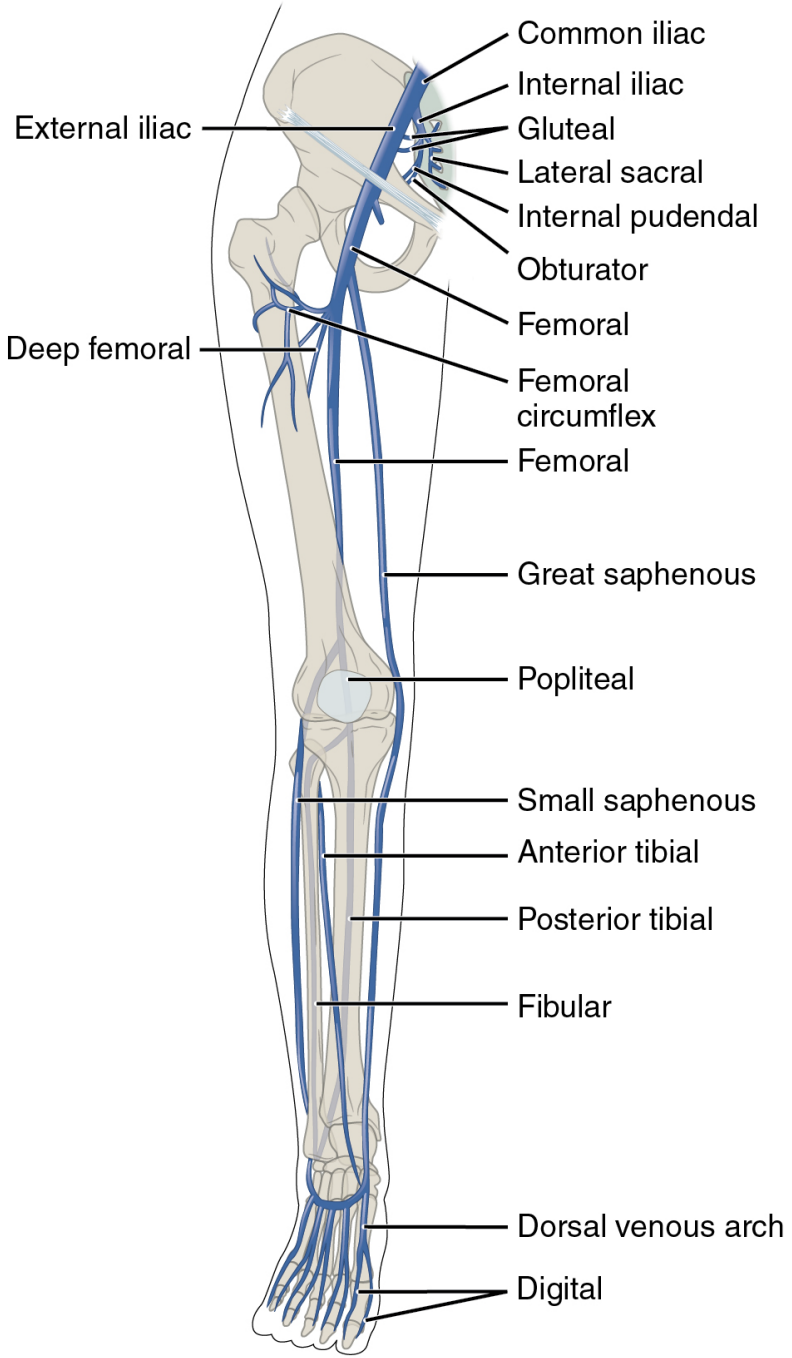


1. J Epidemiol Community Health 1999;53:149-153 doi:10.1136/jech.53.3.149

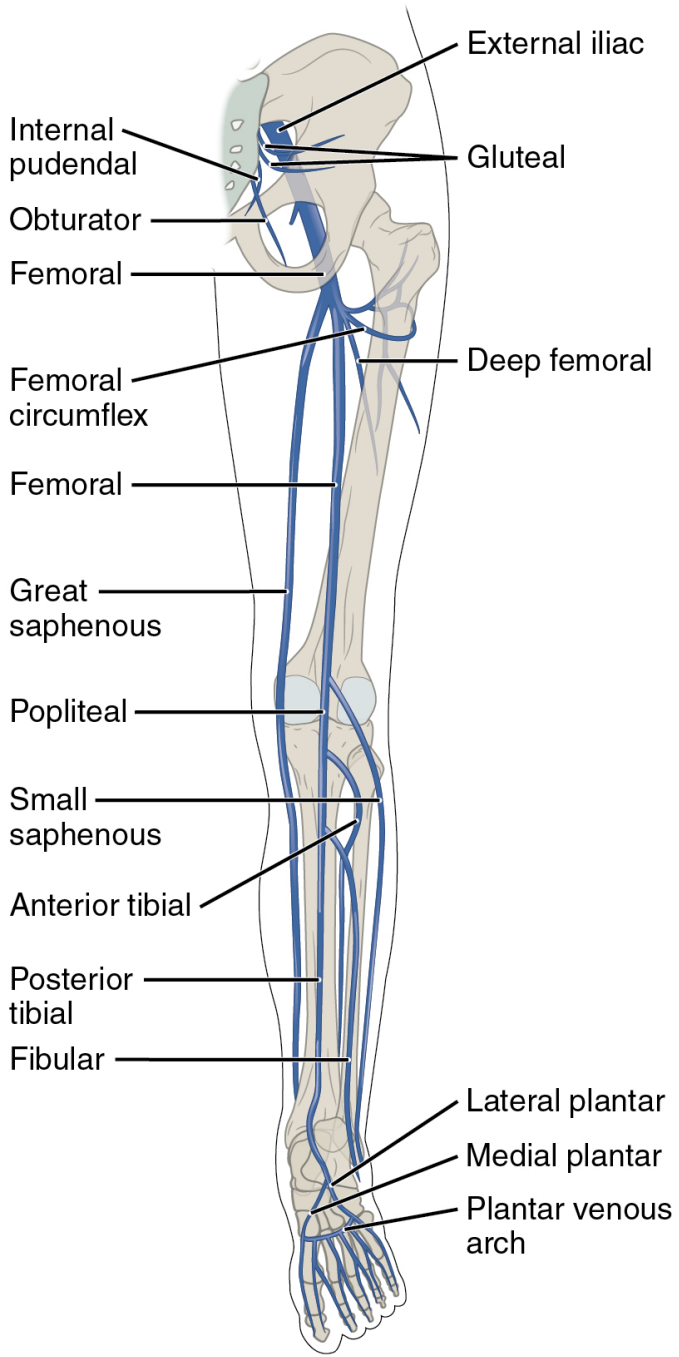
Quick Anatomy and Physiology Class



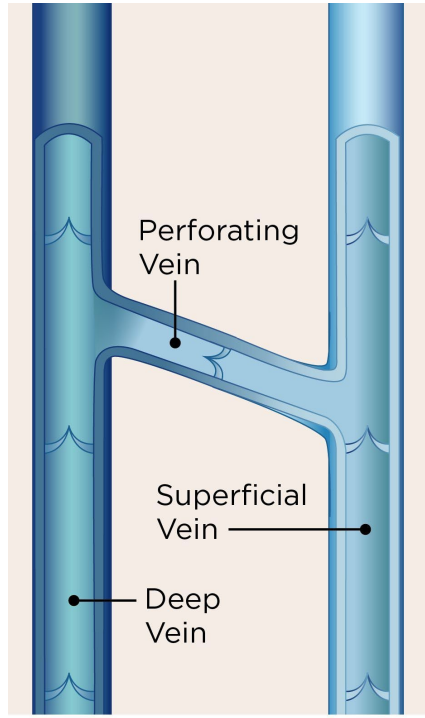


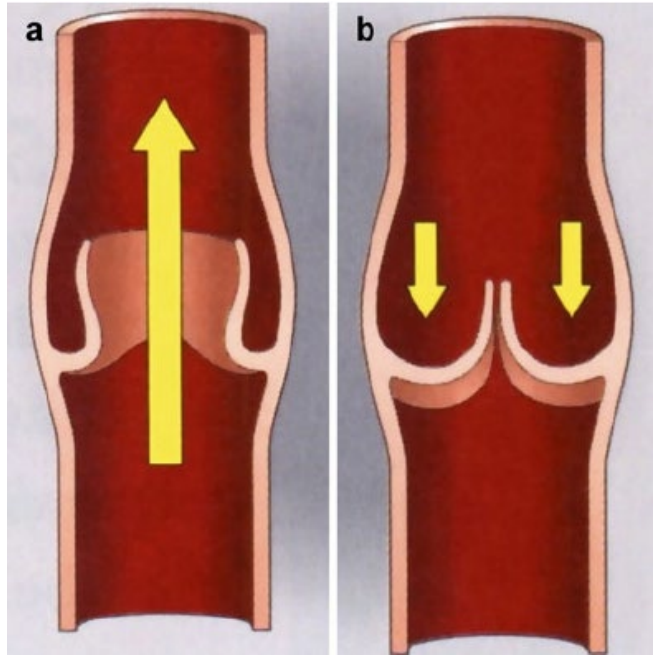


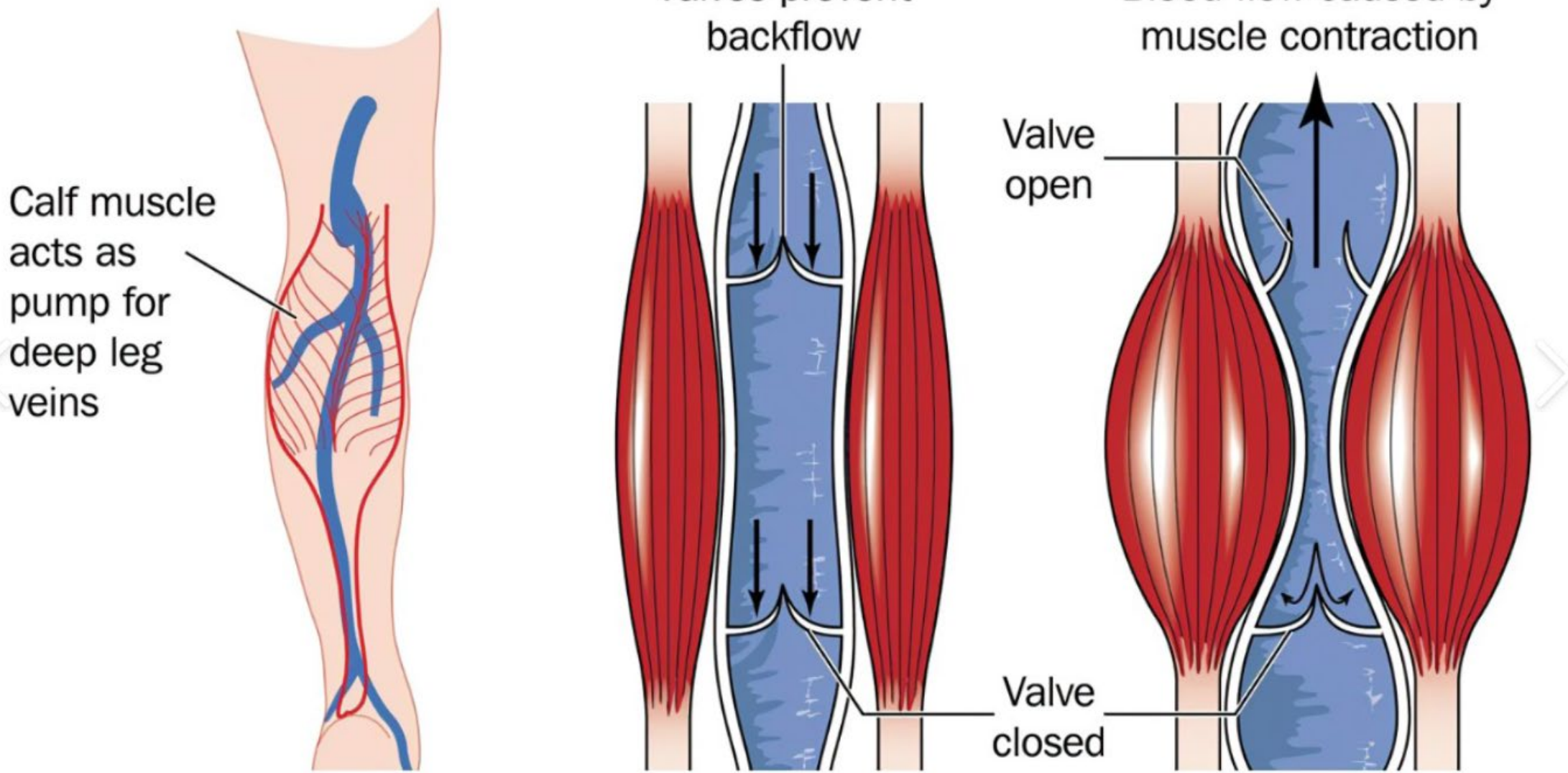
Anterior view



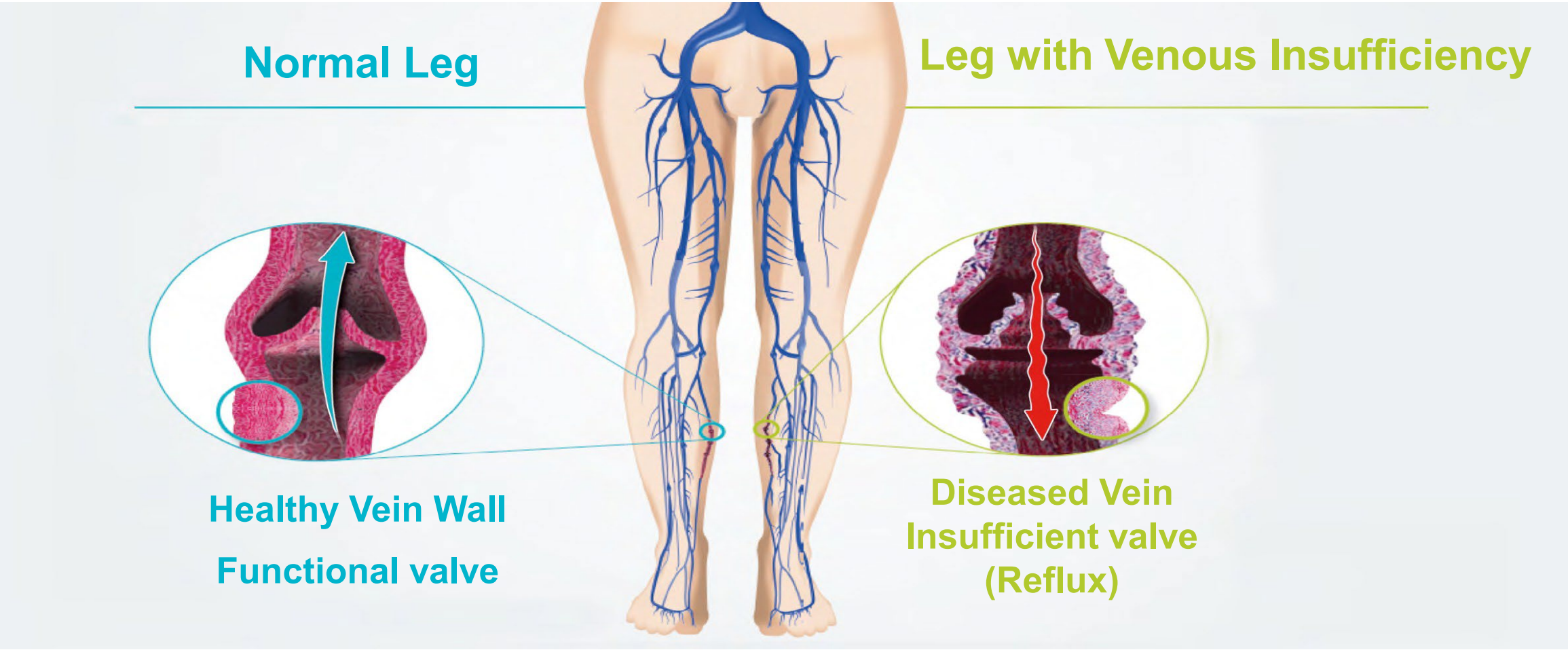
Posterior view






Calf muscle acts as pump for deep leg veins
Valves prevent backflow
Blood flow caused by muscle contraction
Valve open
Valve closed

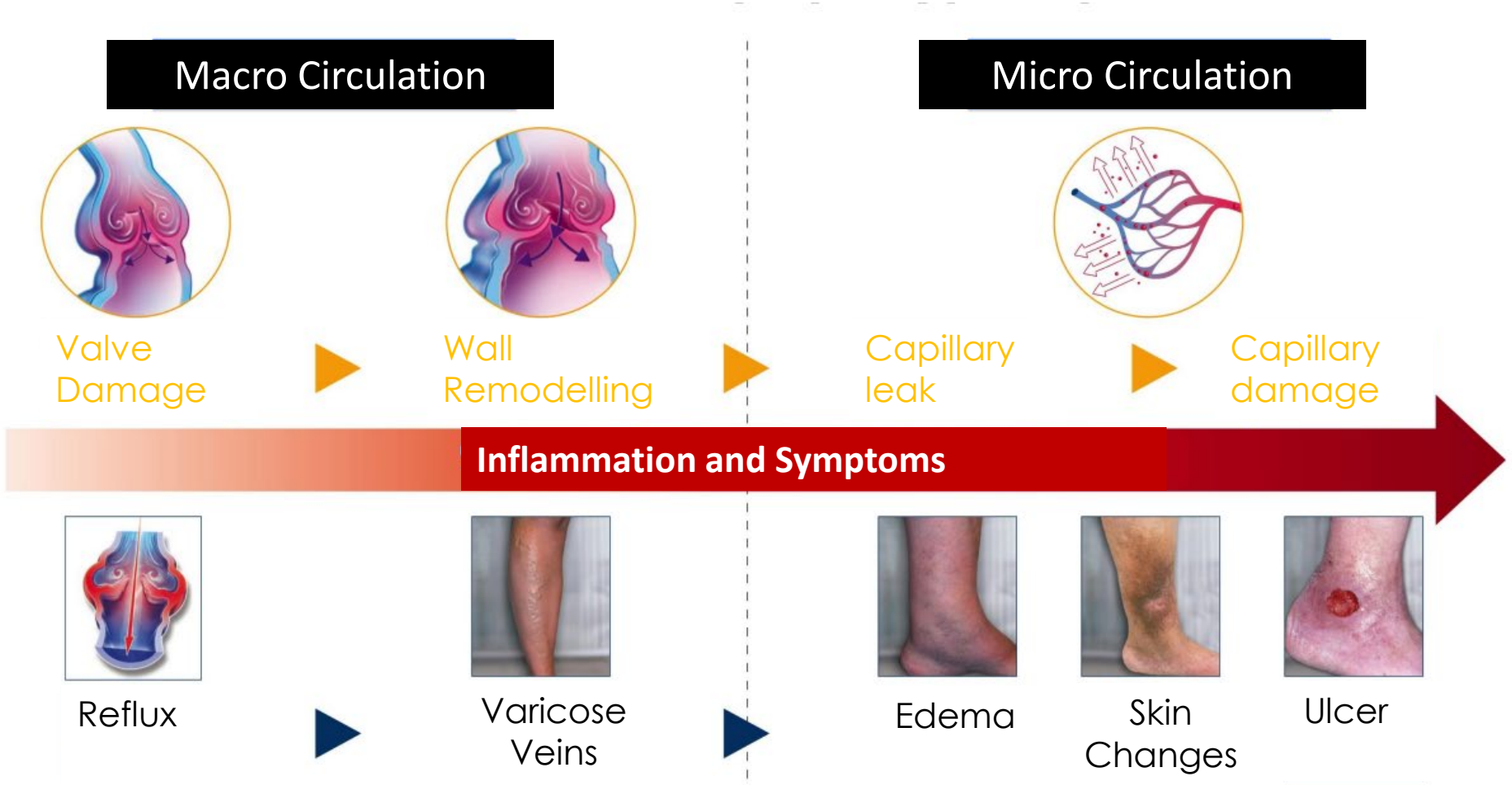
Quick Anatomy and Physiology Class



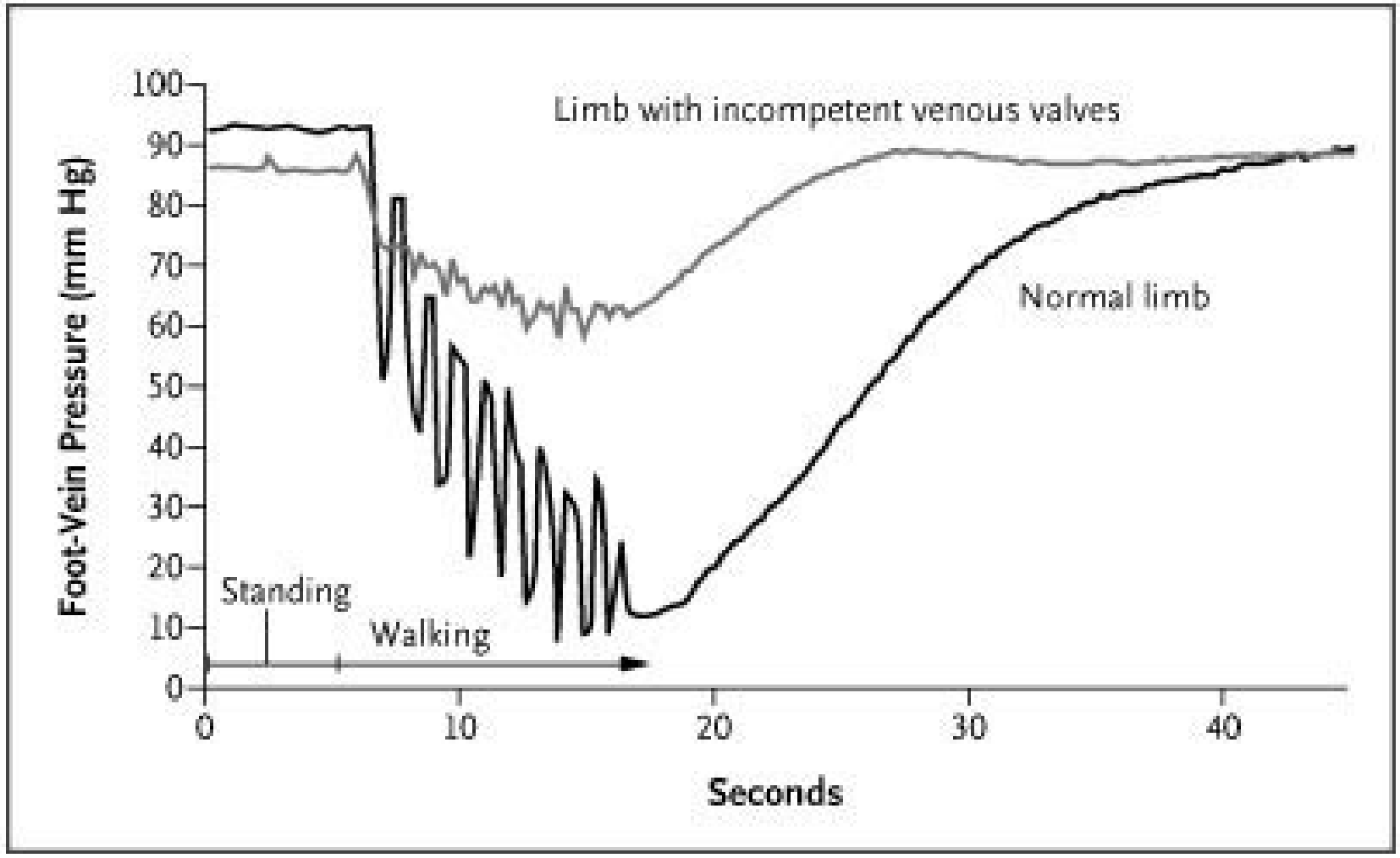
Bergan JJ et al. Mecanism of disease, chronic venous disease. *N Engl J Med.* 2006;355:488-498.

Quick Anatomy and Physiology Class

Reflux and Venous Hypertension Generate Inflammation

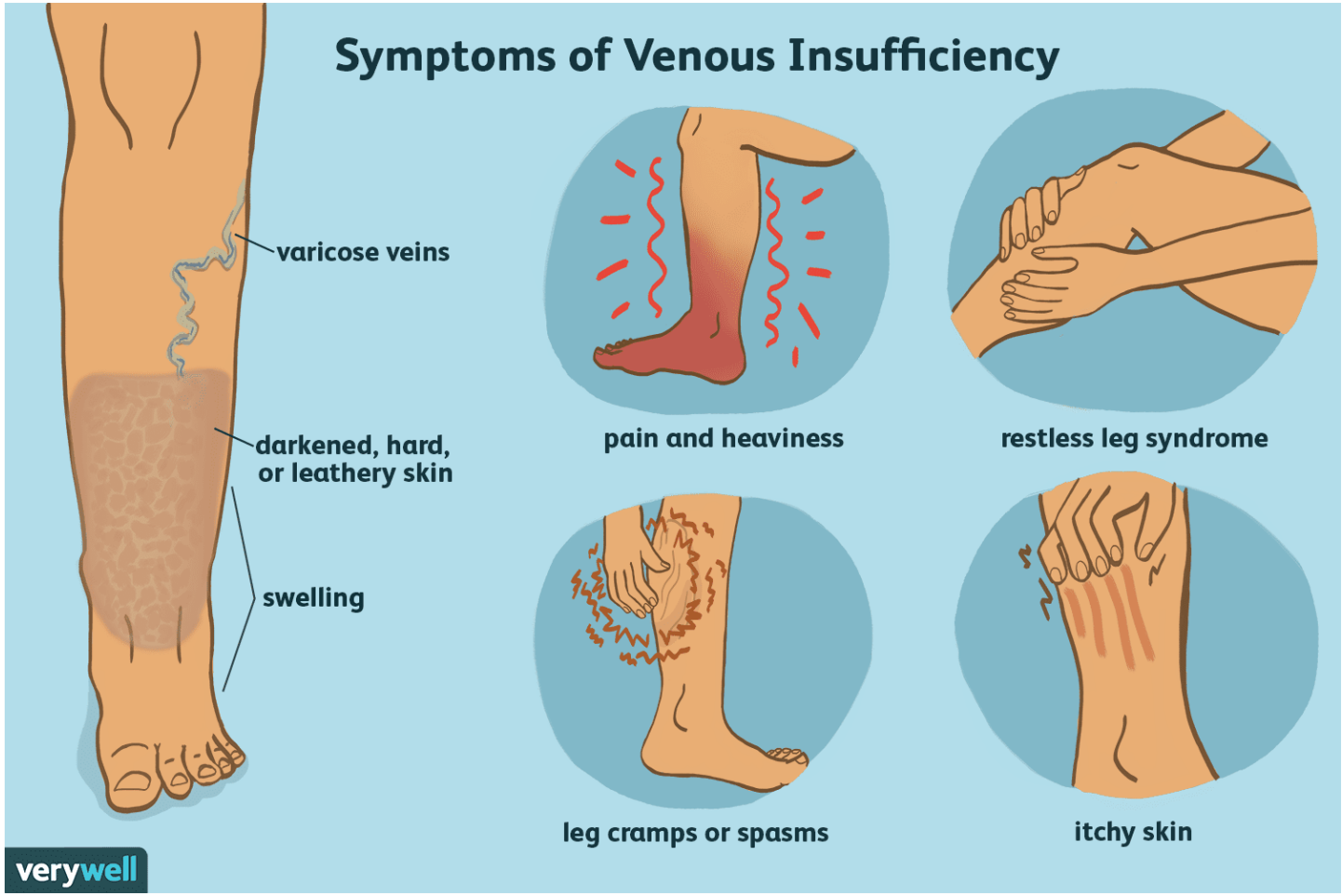


Quick Anatomy and Physiology Class



Symptoms of Venous insufficiency

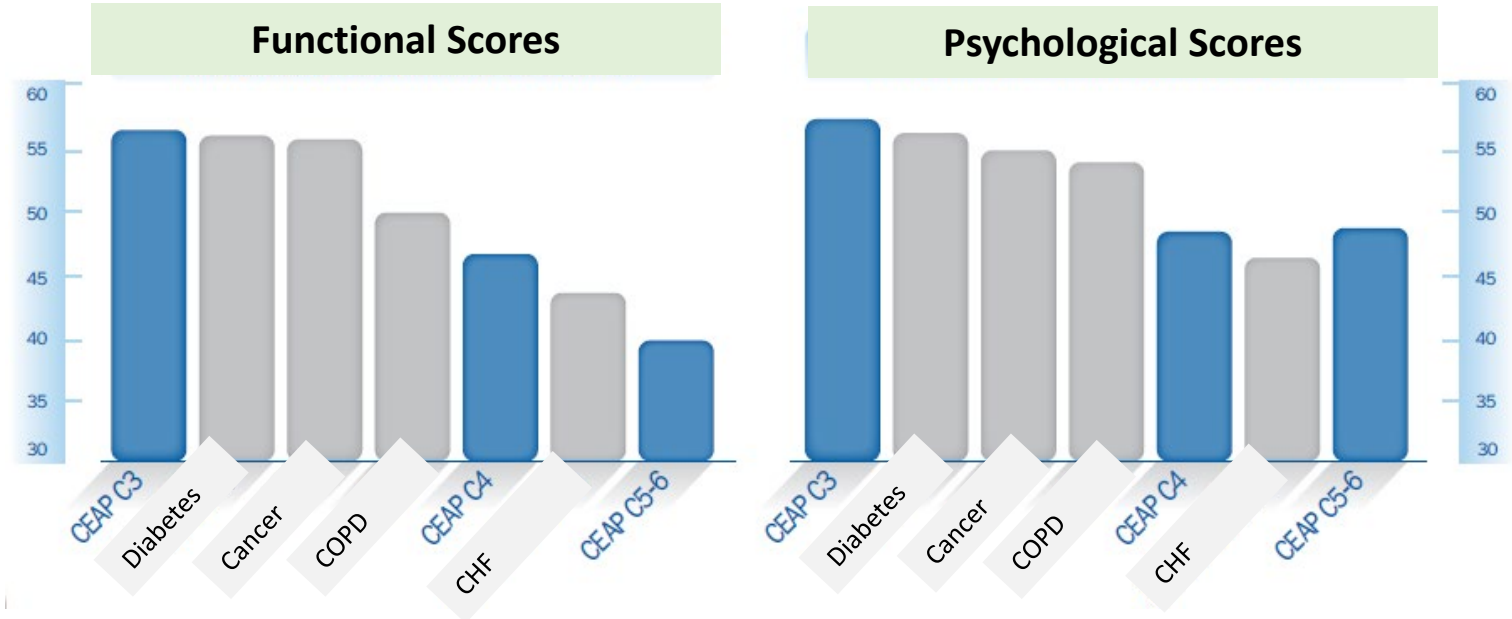
Heaviness
Pain
Sensation of swelling
Swelling (Edema)
Paresthesia
Restless legs
Nighttime cramps
Tiredeness
Throbbing
Itching



Signs & Symptoms - Clinical Classification (CEAP)

CVD affects Quality of Life >>> than we Think

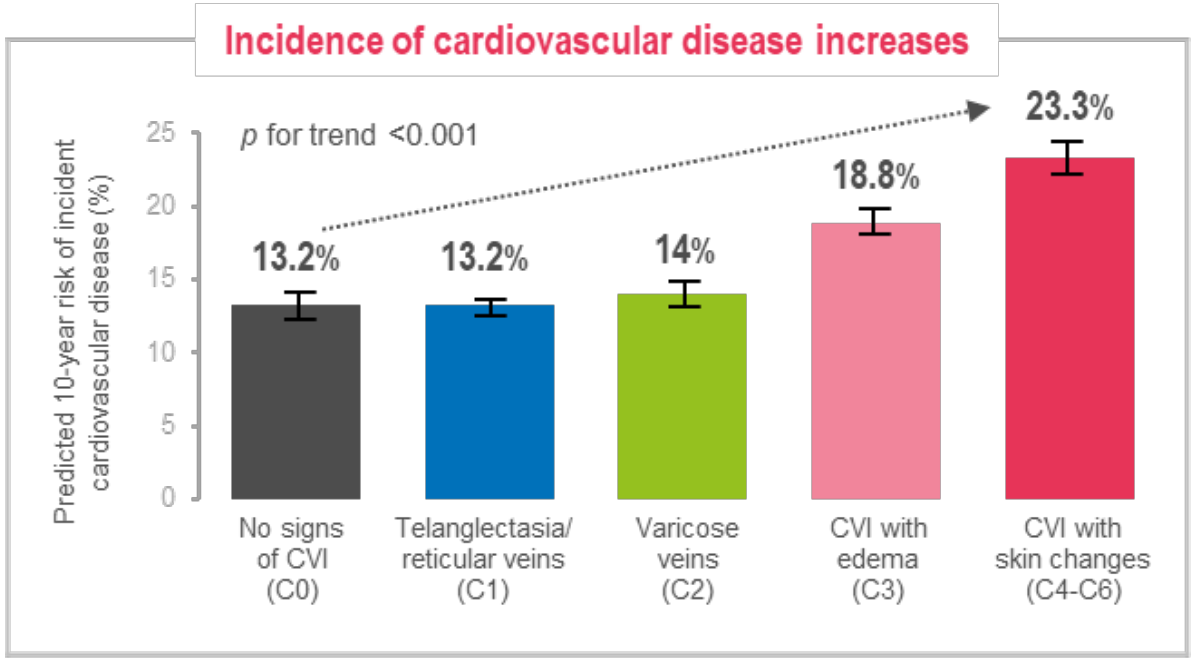
- Venous Insufficiency is not a cosmetic problem – it is a disease
- Quality of life is affected similarly to other chronic diseases (diabetes, cancer, COPD)

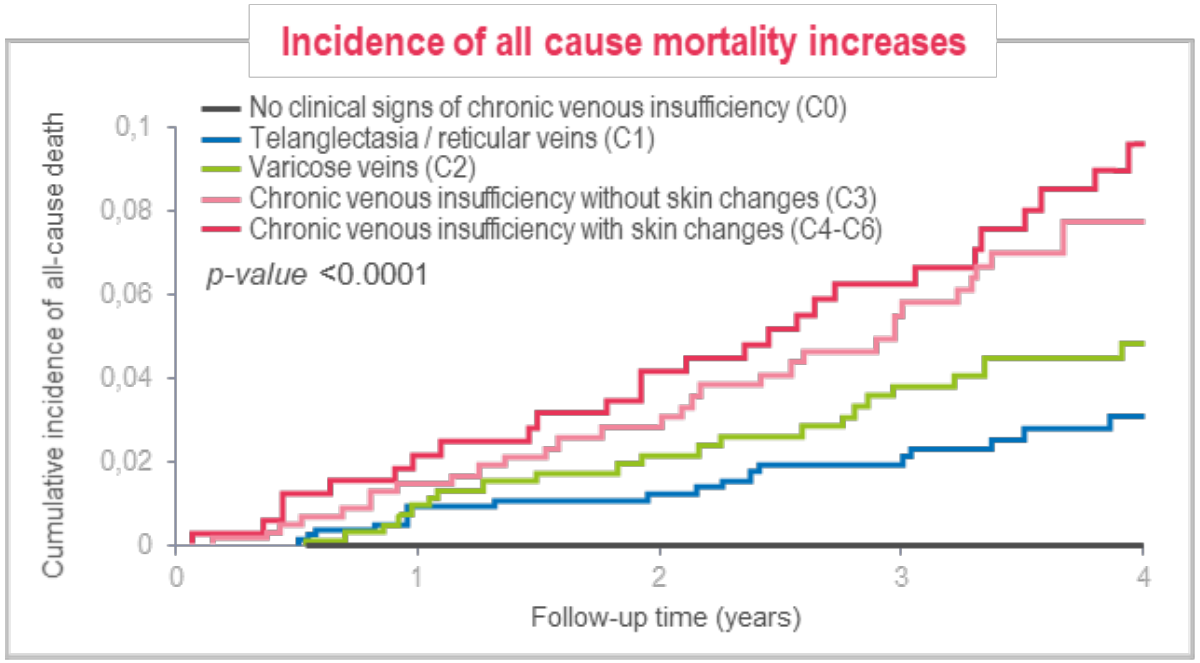


Andreozzi GM et al. Int Angiol. 2005

Chronic Venous Disease and Cardiovascular Mortality

* **Data 12.423 CVD Patients (2012-2017)** *Gutenberg Health Study*



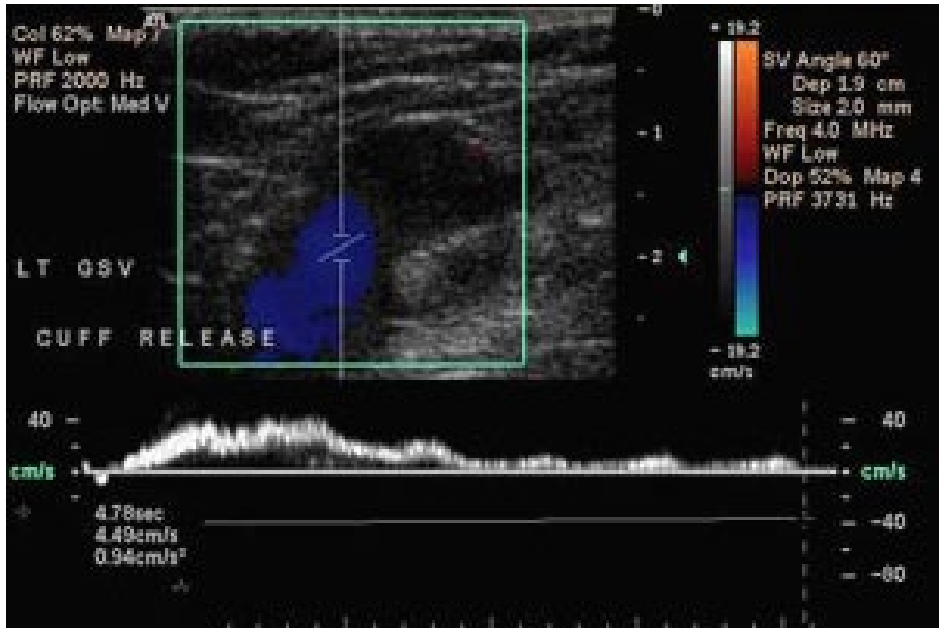


Prochaska J et al. European Heart Journal 2021

Risk Factors

- Genetics
- Disease of Gravity
  - Long standing
  - Tall
- Obesity
- Sedentary llifestyle
- Pregnancy
- Thrombosis

Diagnosis with Duplex Ultrasound in Standing Position



Chronic Venous Disease Treatments

Lifestyle

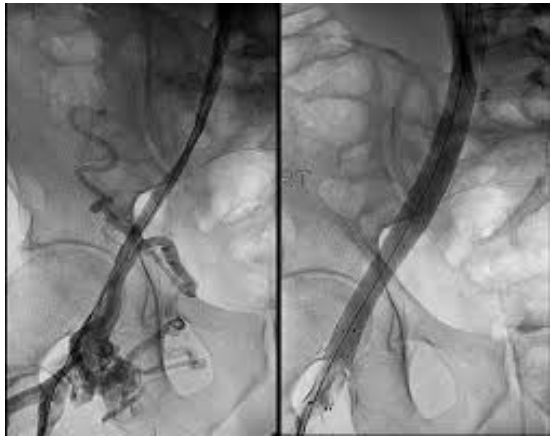
Compression

Venoactive Drugs

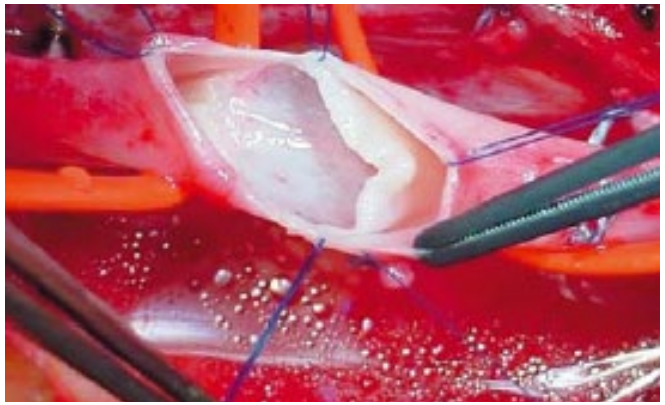
Skin Care

Ablation

Venoplasty



Valve Reconstruction



Take Away Messages

- Chronic Venous disease is the most prevalent vascular disease
- It is the result of venous reflux or venous obstruction leading to venous hypertension
- Chronic venous disease affects patient's quality of life
- Advanced stages are associated with cardiovascular mortality
- Clinical diagnosis and venous duplex
- Treatment: lifestyle changes, compression, minimally invasive treatments

Acute DVT Epidemia

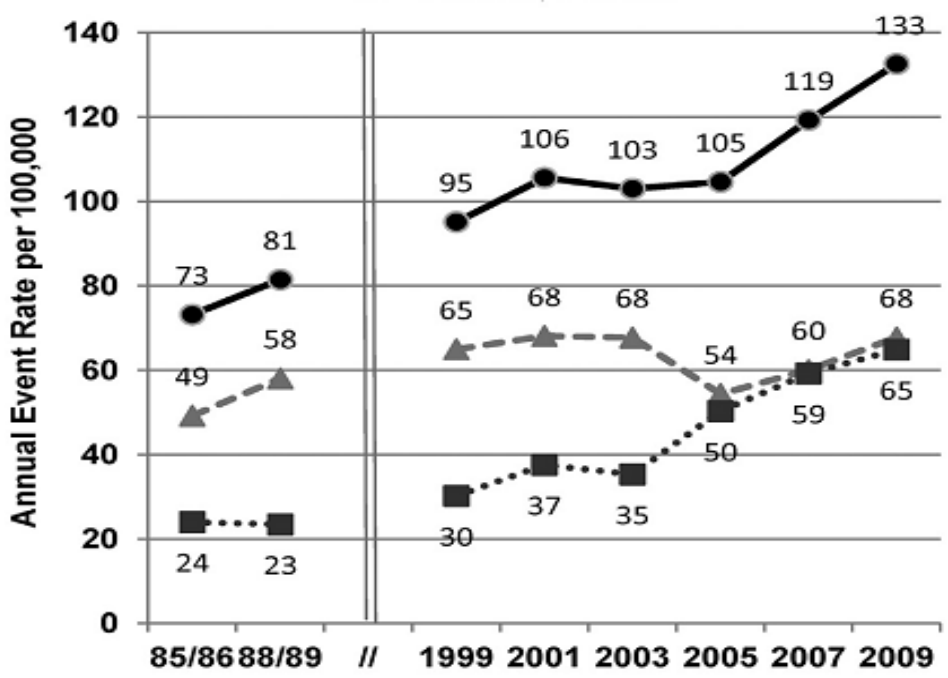
DVT and PE affect 900,000 people in the U.S. every year

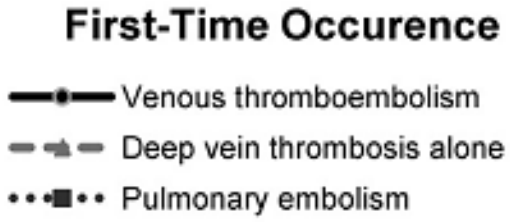
UP TO 1/3 OF DVT PATIENTS DEVELOP A PULMONARY EMBOLISM (PE)

50%+ CAN DEVELOP POST THROMBOTIC SYNDROME

Source: sirweb.org

Acute DVT Epidemia

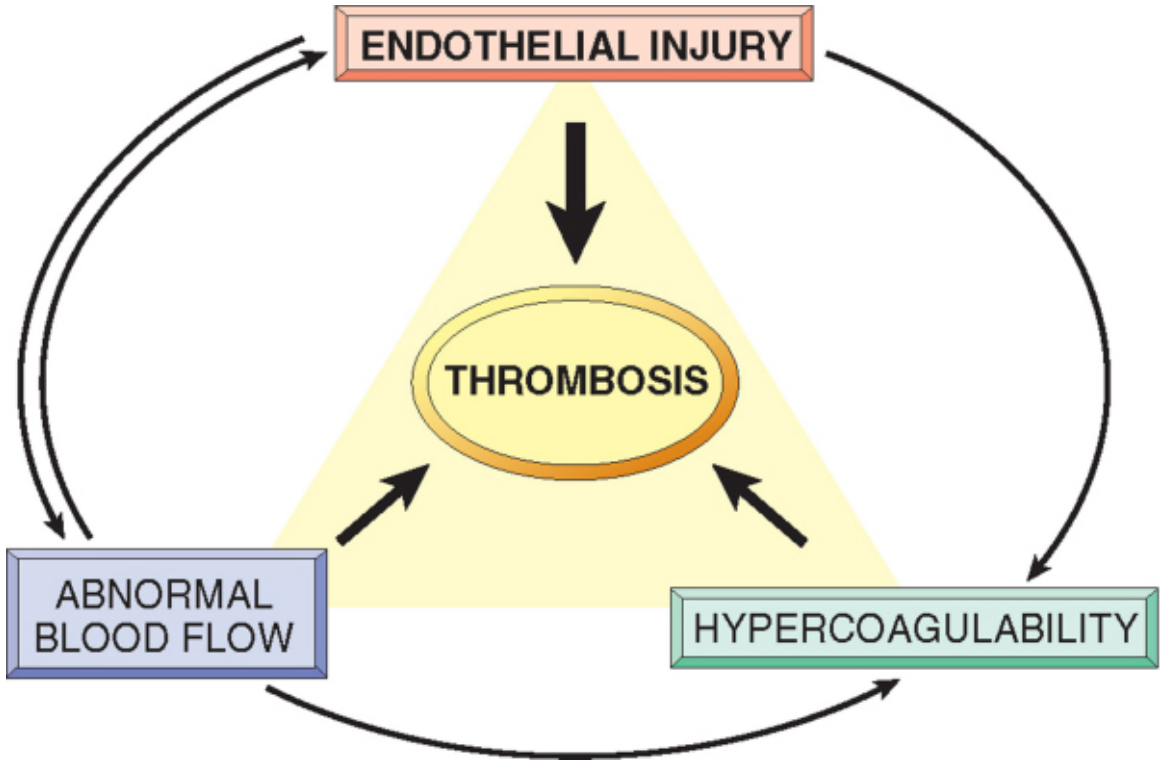




PE Leading cause of preventable in-hospital mortality

Huang et al - Am J Med 2014

Acute DVT Risk Factors



Acute DVT most often occurs in hospitalized patients, particularly those with cancer or following surgical procedures, but also occurs in the general public…

DVT Treatment Goals

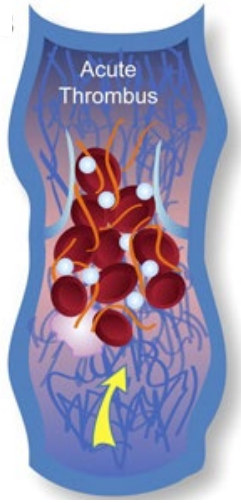
Prevent pulmonary embolus & associated mortality

Prevent limb loss (venous gangrene)

Alleviate acute symptoms

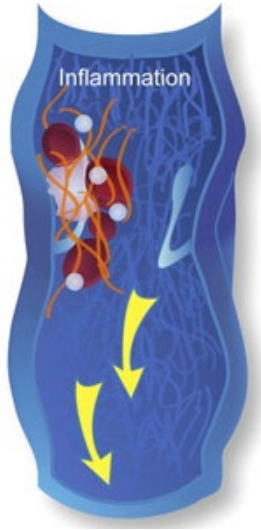
Prevent post-thrombotic syndrome

From acute DVT to PTS (Post-thrombotic Syndrome)

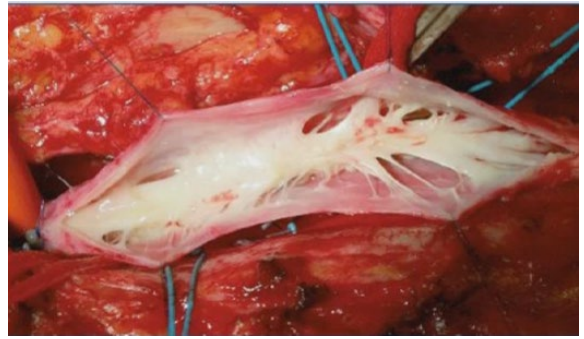


35-50% of IF DVTs will progress to PTS
15% Severe PTS

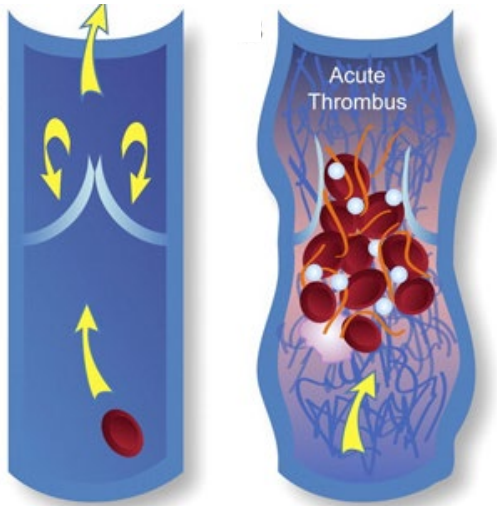
Chronic Deep Vein Changes



3 months **1 year** **2 years**



From acute DVT to PTS



35-50% of IF DVTs will progress to PTS
15% Severe PTS

Chronic Deep Vein Changes

Pain
Swelling
Claudication
Pigmentation
Ulceration

3 months

1 year

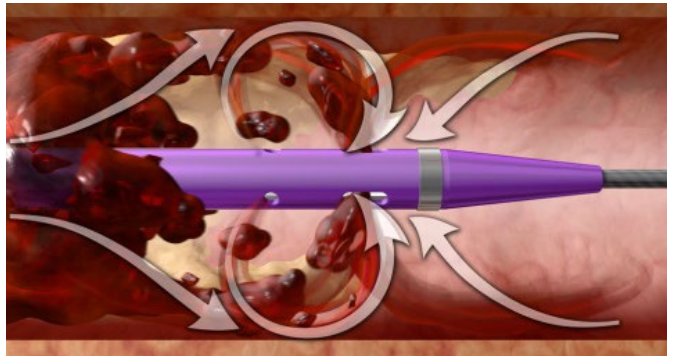
2 years

DVT Treatment Options

OBSERVATION

Anticoagulation

INTERNETION



Anticoagulation is the Standard of Care

Critical to obtain therapeutic level in 24hrs

Advantages:

- Prevents Clot propagation
- Reduces occurrence of a PE
- Can decrease symptoms / recurrence

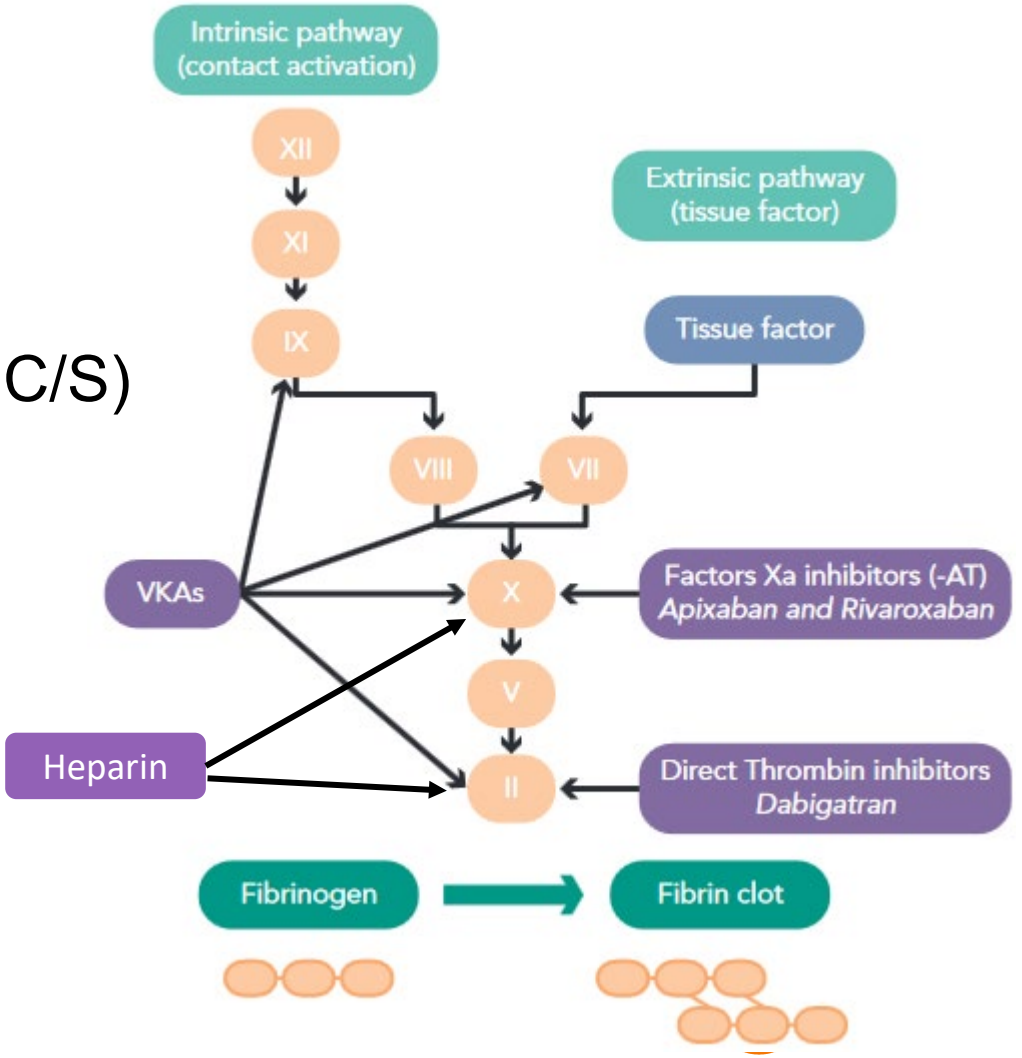
Disadvantages / Side effects:

- <4% will have complete thrombus resolution
- Has not been shown to reduce incidence of valve damage
- Bleeding – HIT (heparins) - Osteoporosis (Vit. K ant)

AbuRahma AF. Annals of Surgery 2001

Anticoagulation Decision Making – Type and Duration

- ***Heparin / LMWH / Fondaparinux***
  - Binds to Antithrombin (blocks Xa & IIa)
  - Initiate immediately
- ***Coumadin***
  - Vit K antagonist (inhibits II, VII, IX, X & proteins C/S)
  - Start on first day (always overlap with heparin)
  - Target INR 2-3 (need for repeat blood draws)
- ***Direct Oral Anticoagulants (DOACs)***
  - Factor Xa or IIa (Thrombin) inhibitors
  - No need for monitoring



Anticoagulation Decision Making – Type and Duration

Decision making is largely guided by VTE subgroup

- Provoked vs Unprovoked
- Cancer-associated vs No cancer
- Lower extremity
  - Proximal vs Distal DVT – 5x recurrence
- Upper extremity
  - Catheter vs non-catheter associated

BD

Compression – European Guideline

Recommendation 31

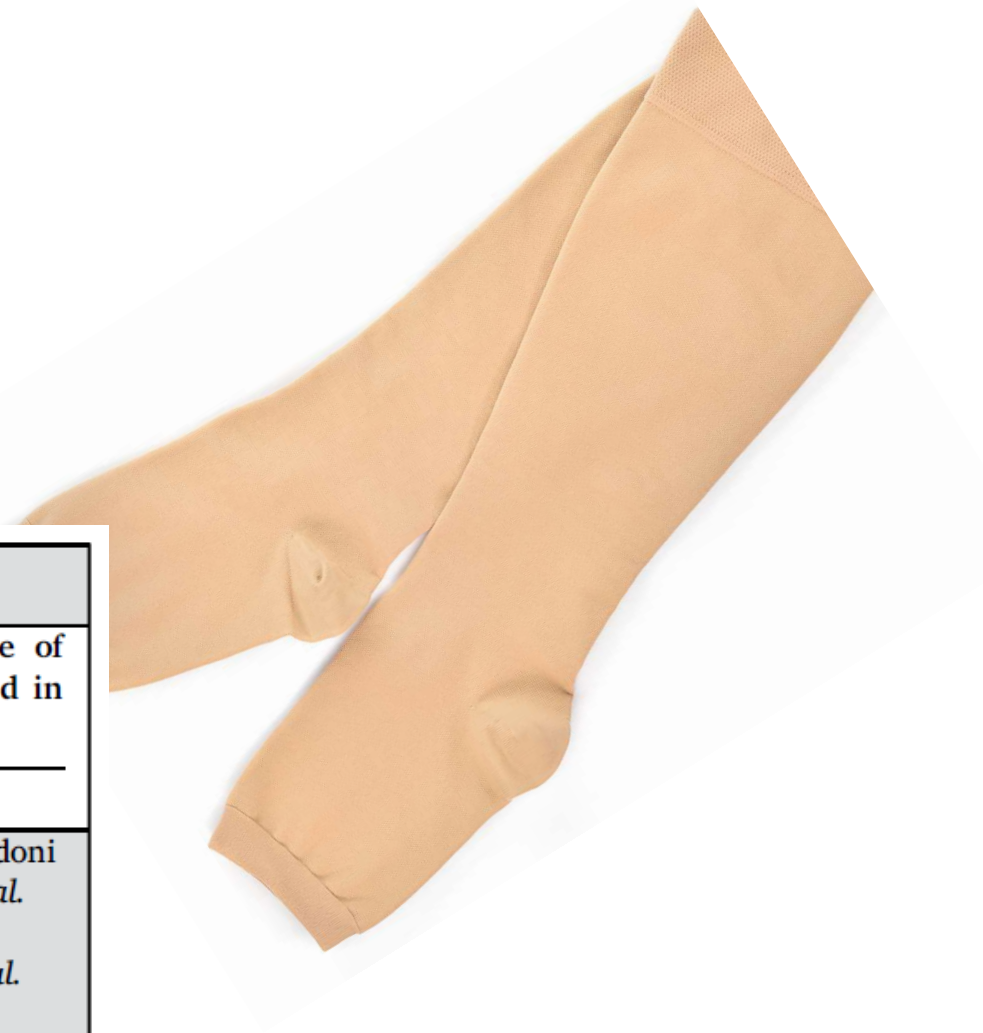
For patients with proximal deep vein thrombosis, early compression at 30 – 40 mmHg with either multilayer bandaging or compression hosiery, applied within 24 hours, is recommended to reduce pain, oedema, and residual venous obstruction.

Class	Level	References
I	A	Partsch & Blattler (2000),[181] Rou… Arp… *et c*

Recommendation 32

For patients with proximal deep vein thrombosis, use of below knee compression stockings should be considered in order to reduce the risk of post-thrombotic syndrome.

Class	Level	References
IIa	A	Kahn *et al.* (2014),[173] Prandoni *et al.* (2004),[174] Partsch *et al.* (2004),[176] Brandjes *et al.* (1997),[202] Aschwanden *et al.* (2008),[208] Ginsberg *et al.* (2001)[212]



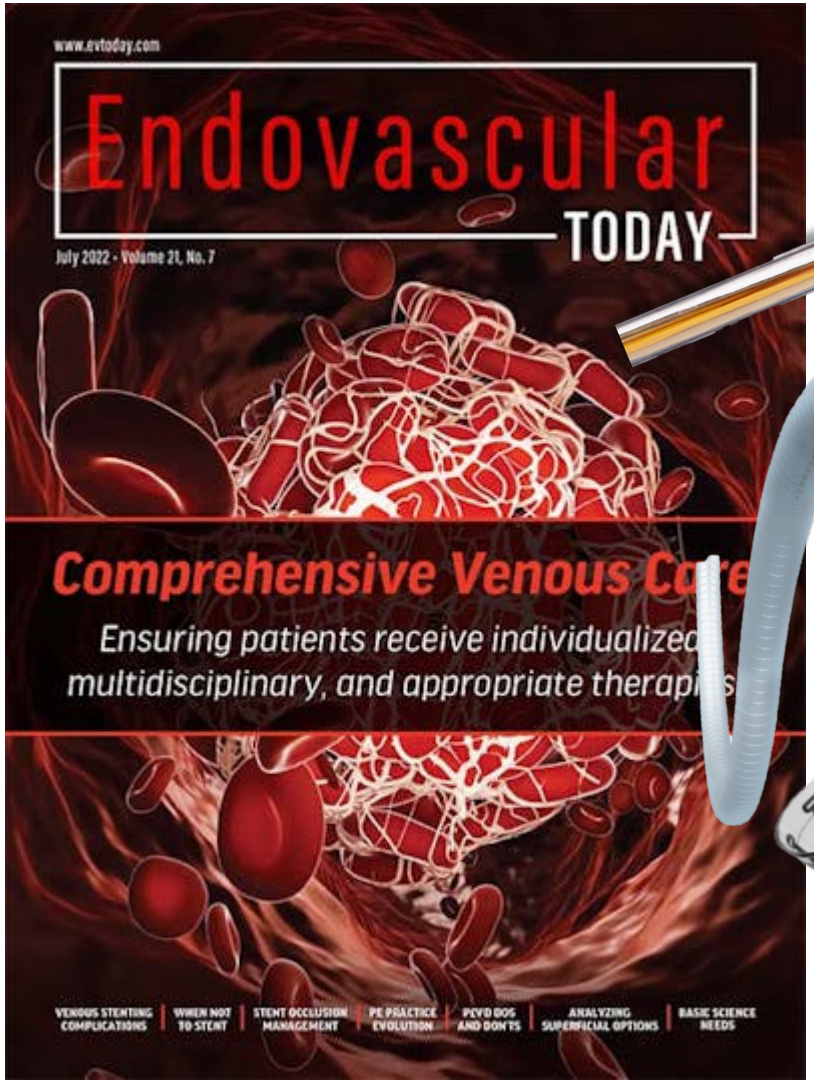
ESVS Guidelines 2020

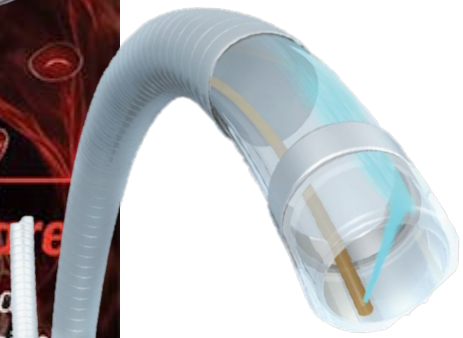
Some patients need more than AC & Compression …

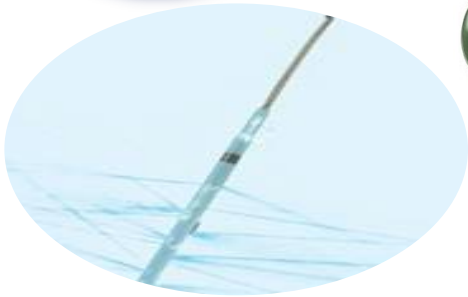
Choose the ideal candidate and intervene early

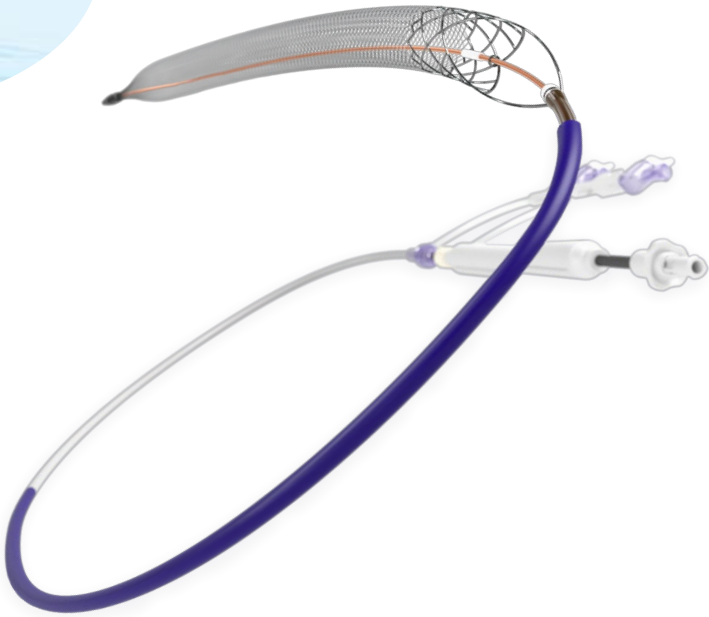
- Symptomatic Iliofemoral/Caval DVT
  - Active – Good Risk Patient
- <14 days
  - Thrombus damages valve
  - Thrombus turns to collagen

Know your tools' strengths and weaknesses…





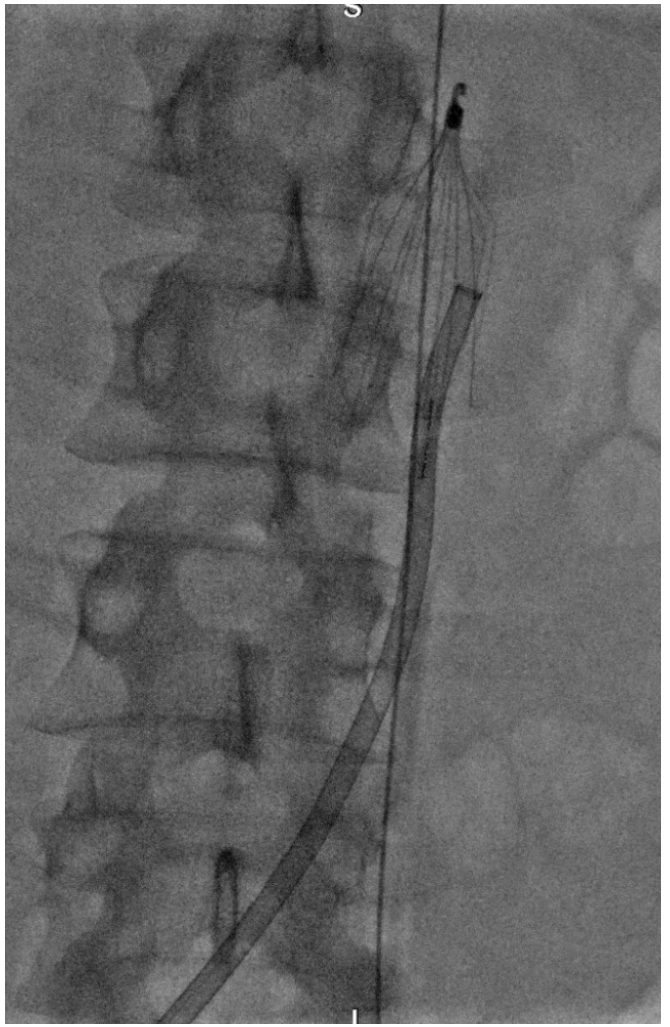




Indigo CAT 12 Lightning - Penumbra

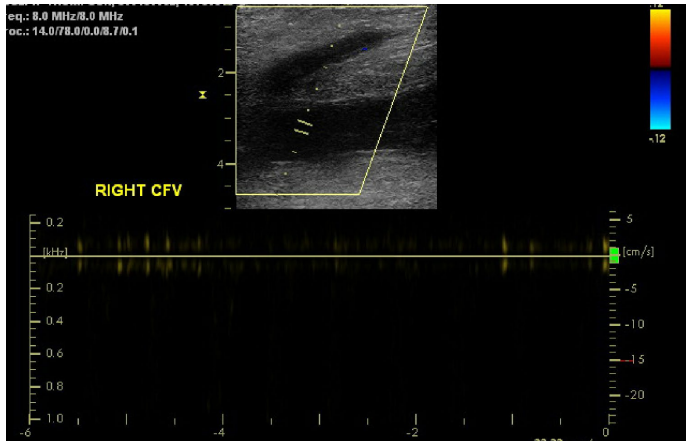
Intelligent Aspiration

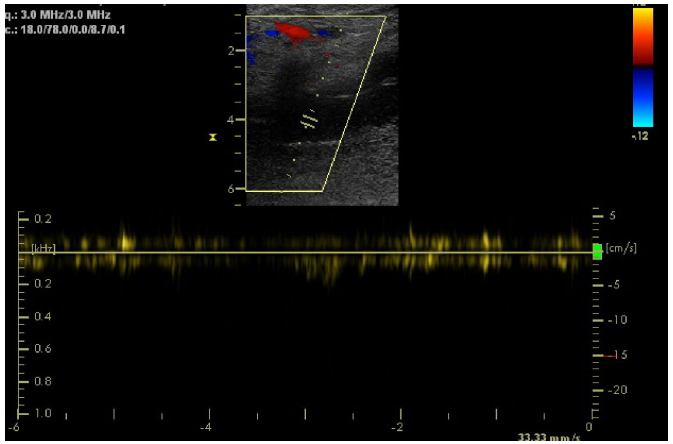
Lightning Flash
16Fr

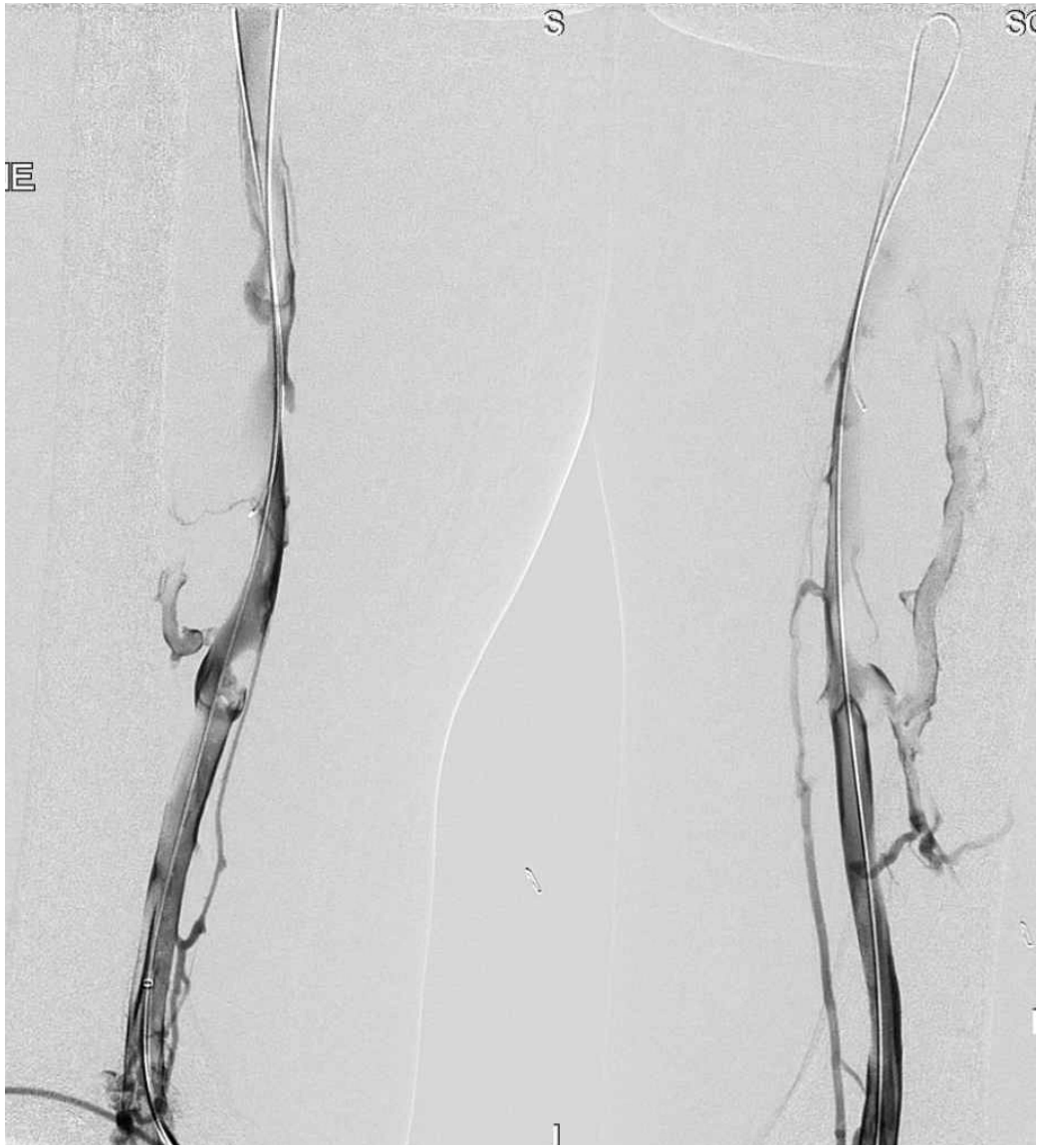


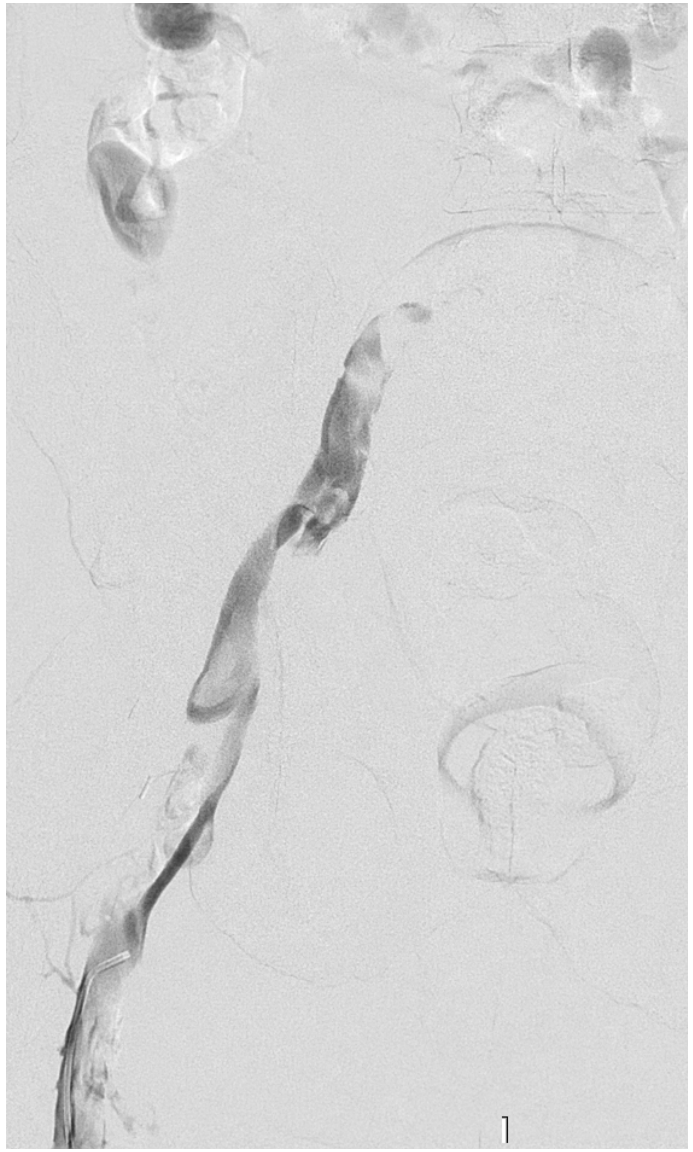
2021: 43 y.o. Male with Bilateral Swelling and Pain

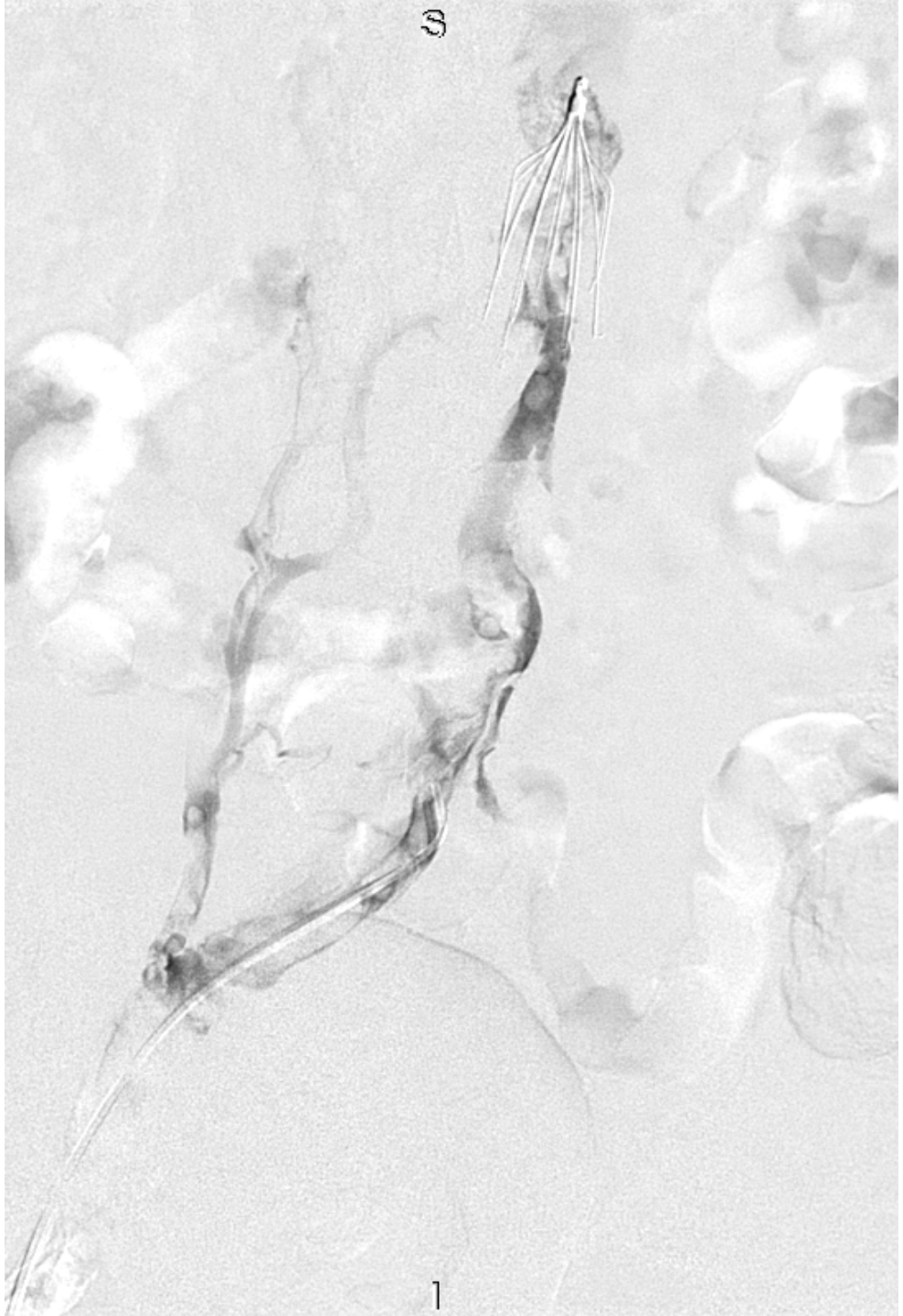
- Bilateral leg swelling
- Severe Back/Leg/Groin pain
- Hx of DVT/PE and surgical thrombectomy
- IVC filter was placed
- 48 hour heparin non improvement







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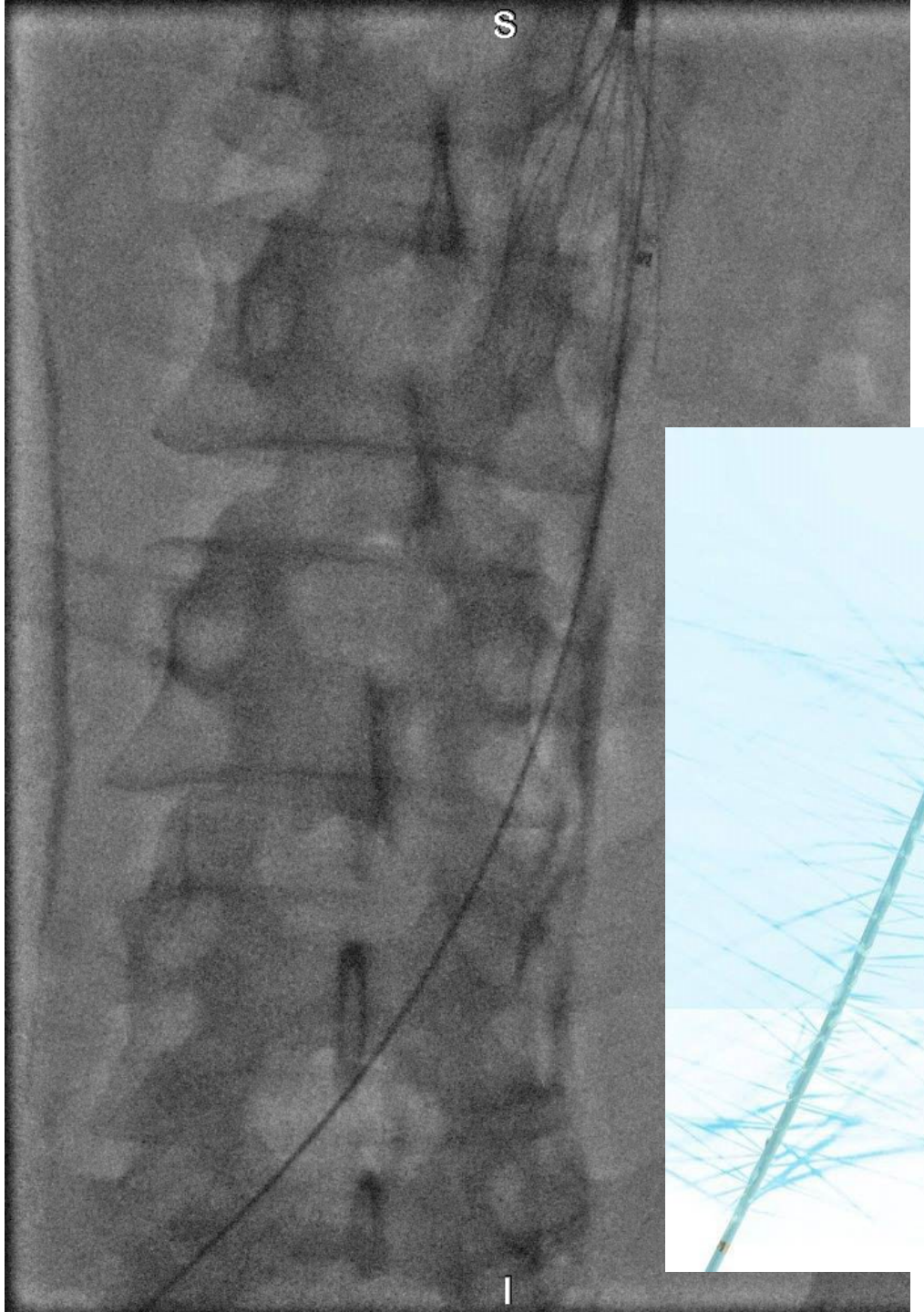
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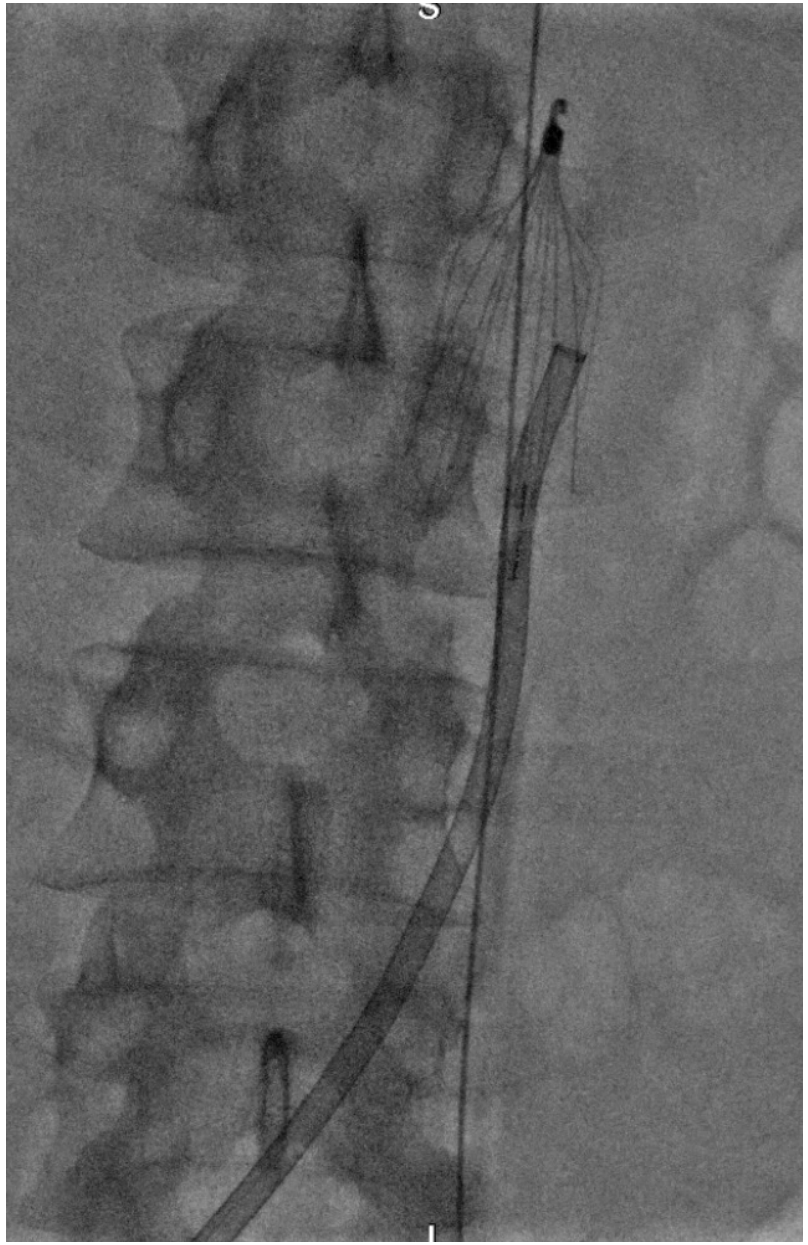

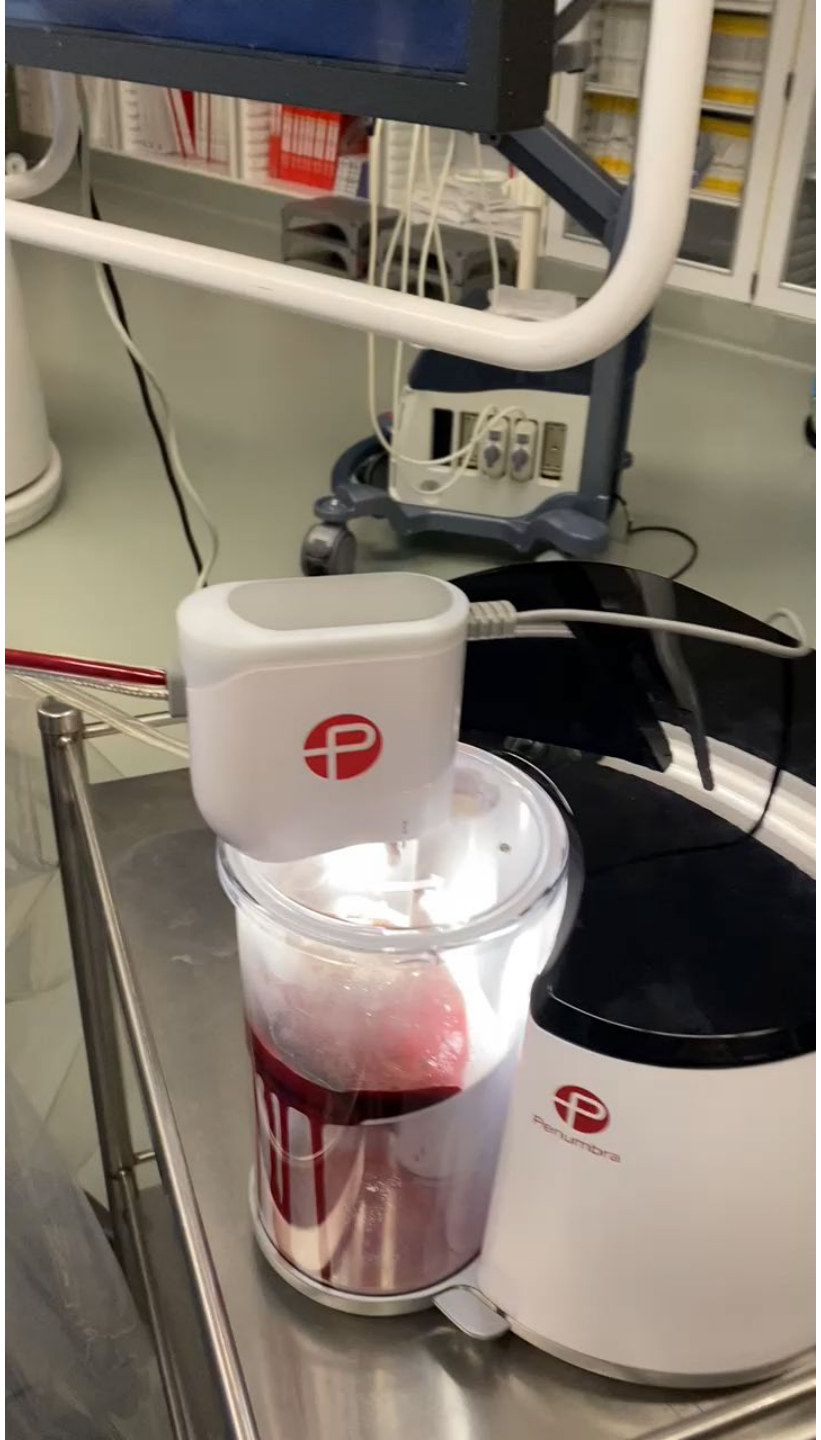
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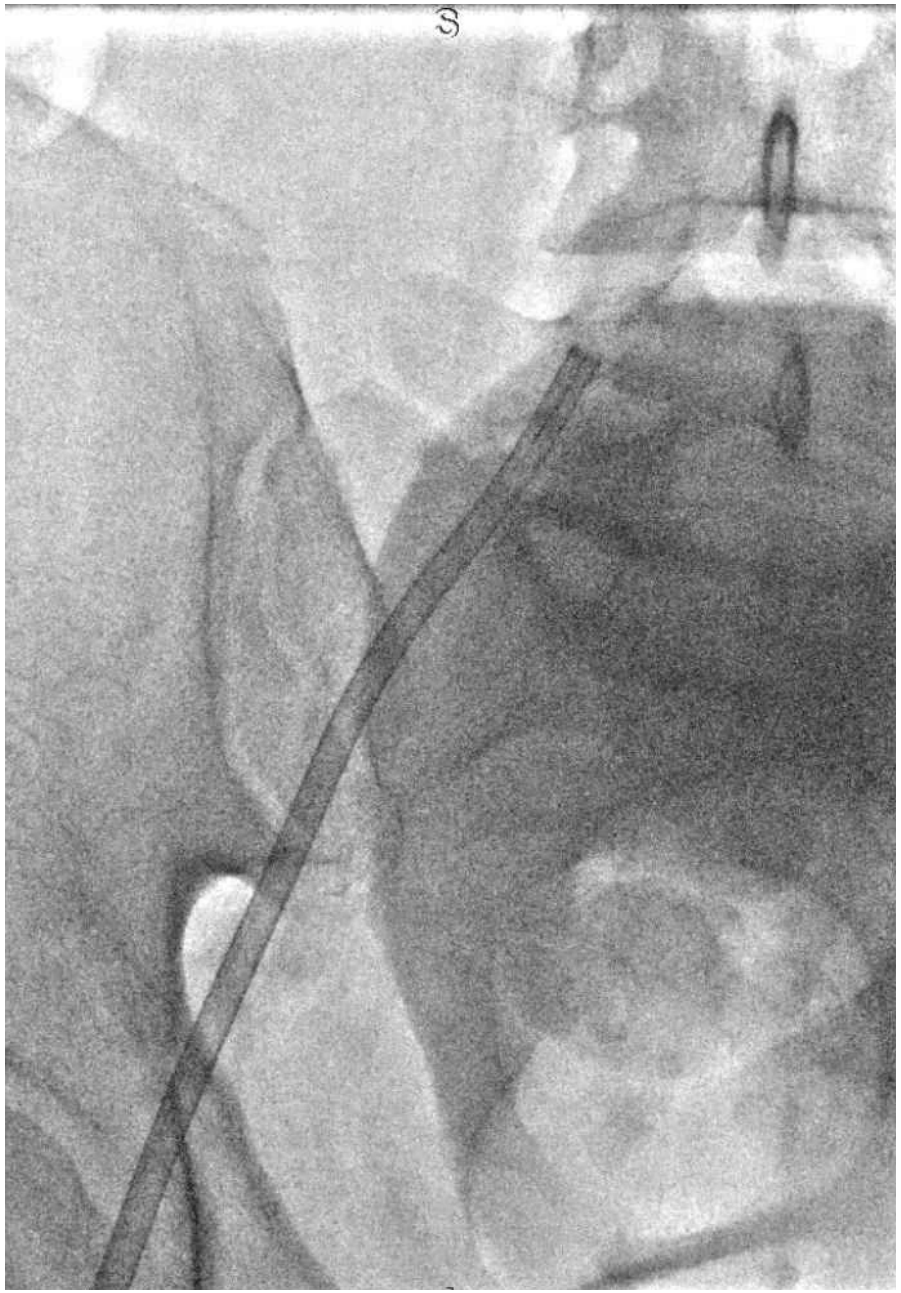

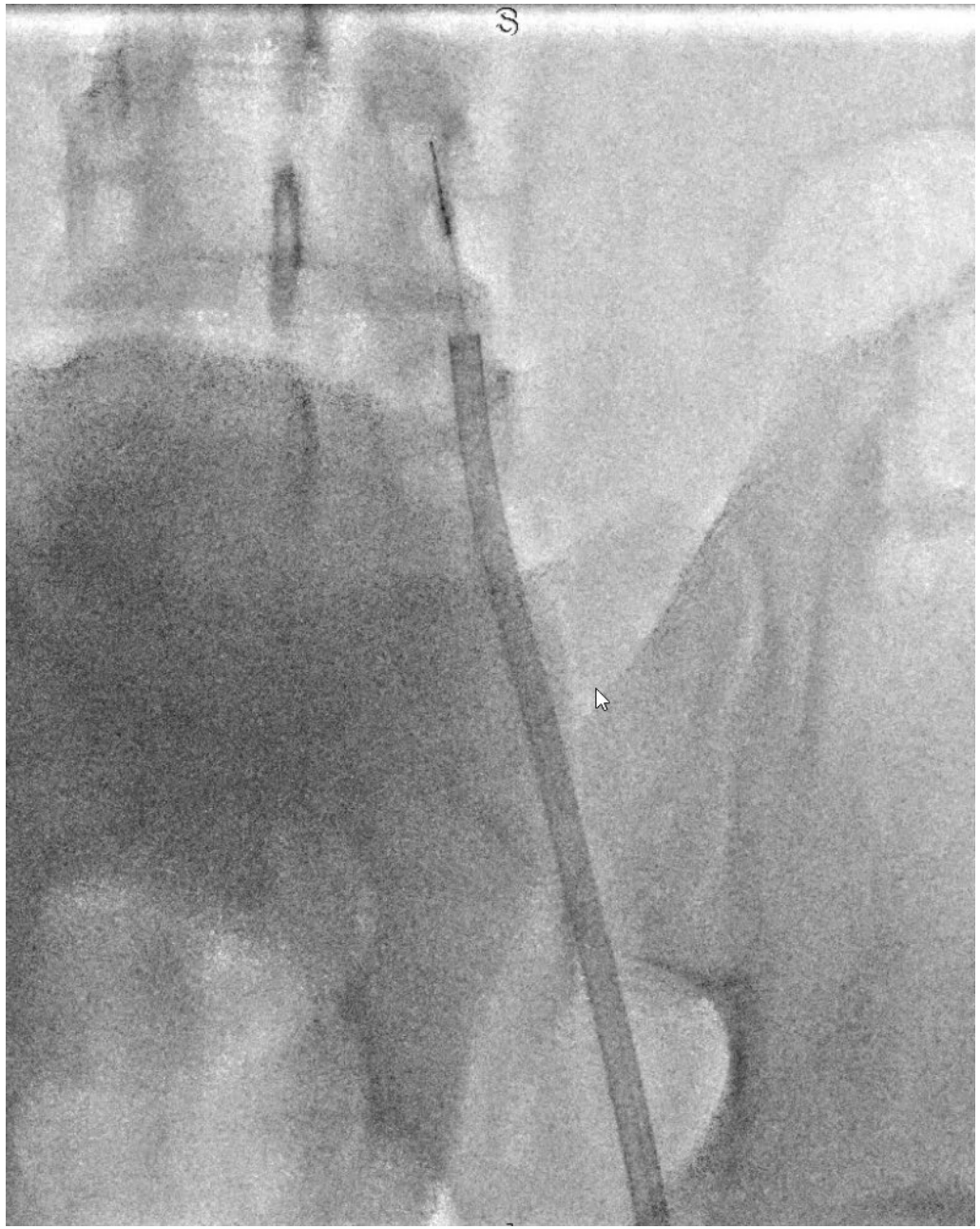


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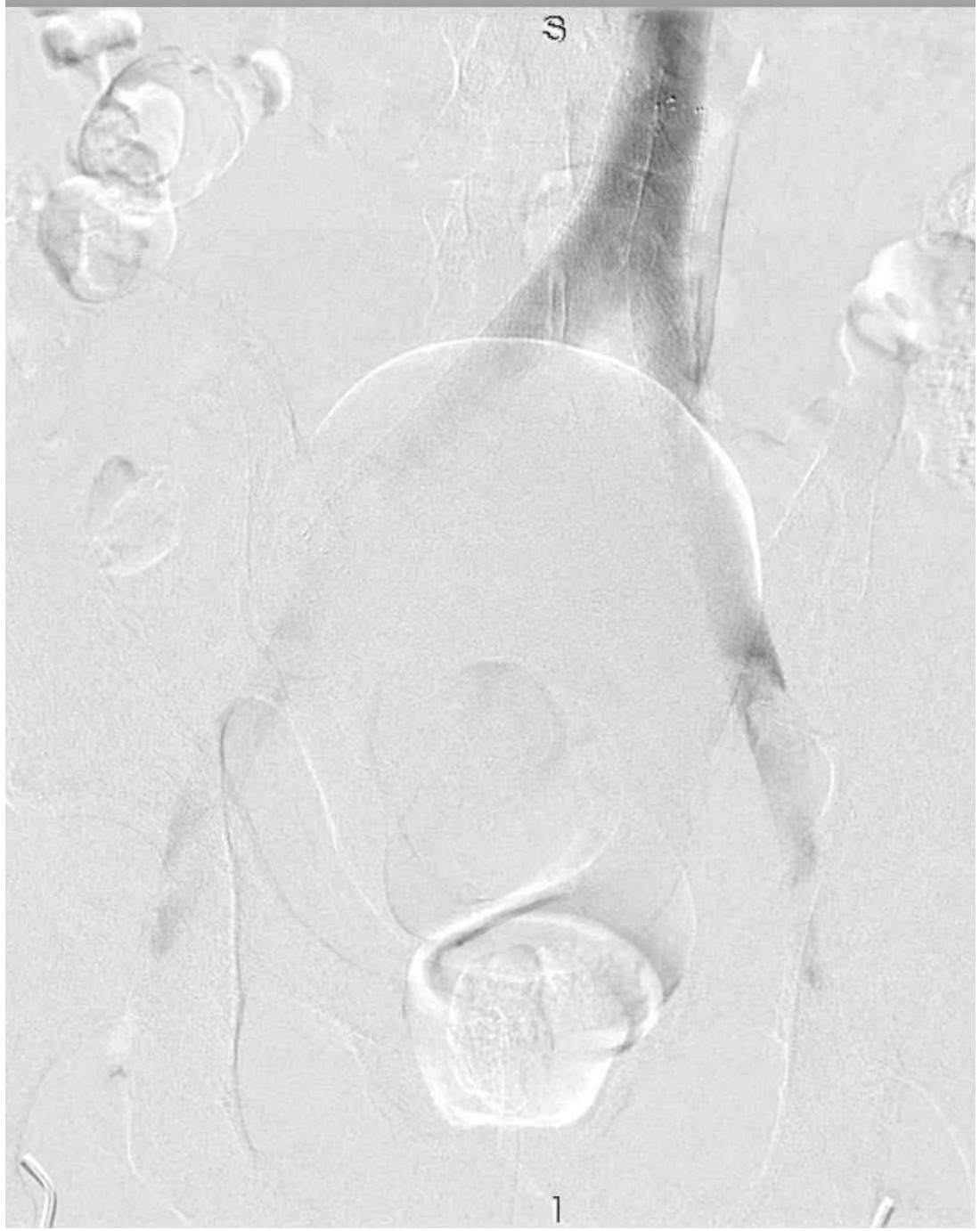
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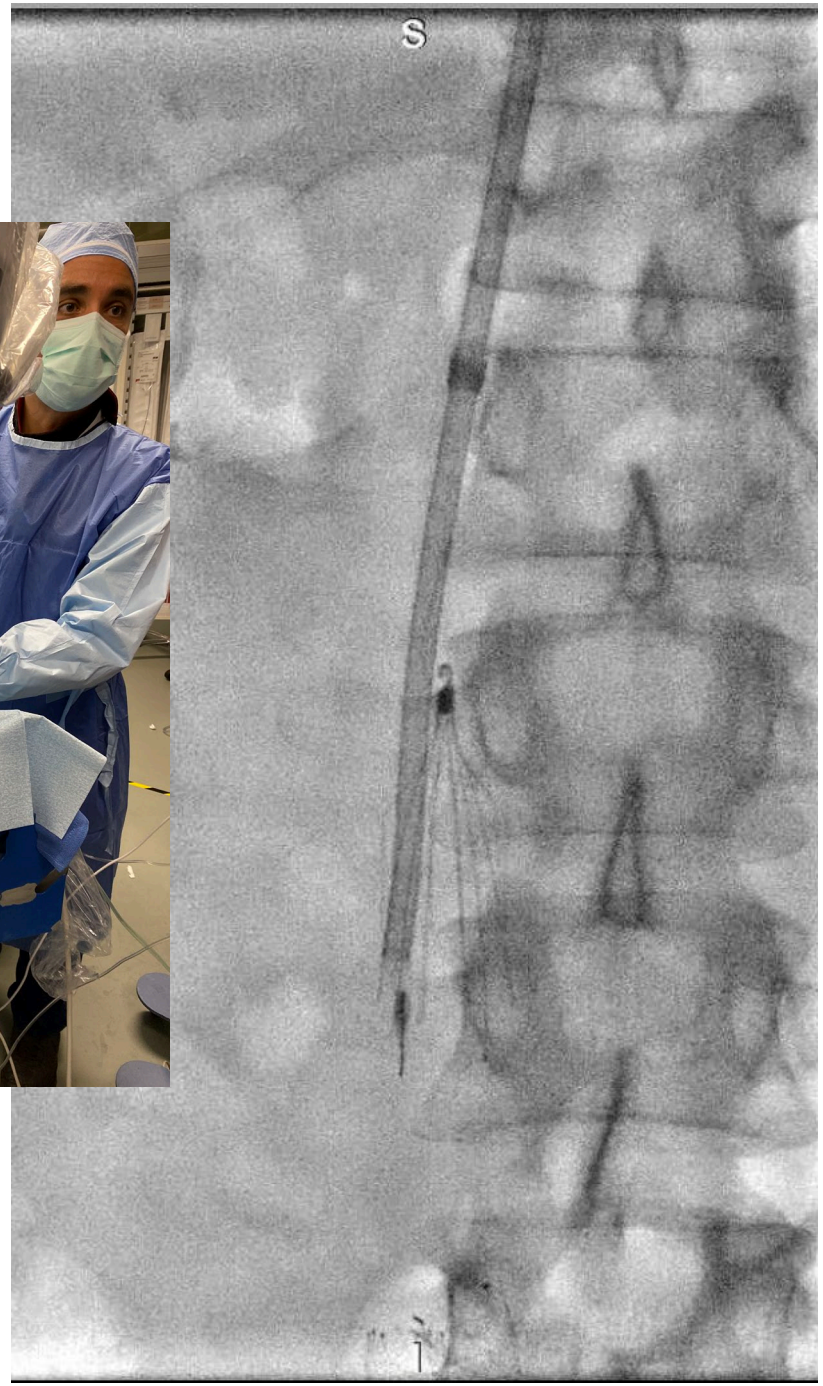
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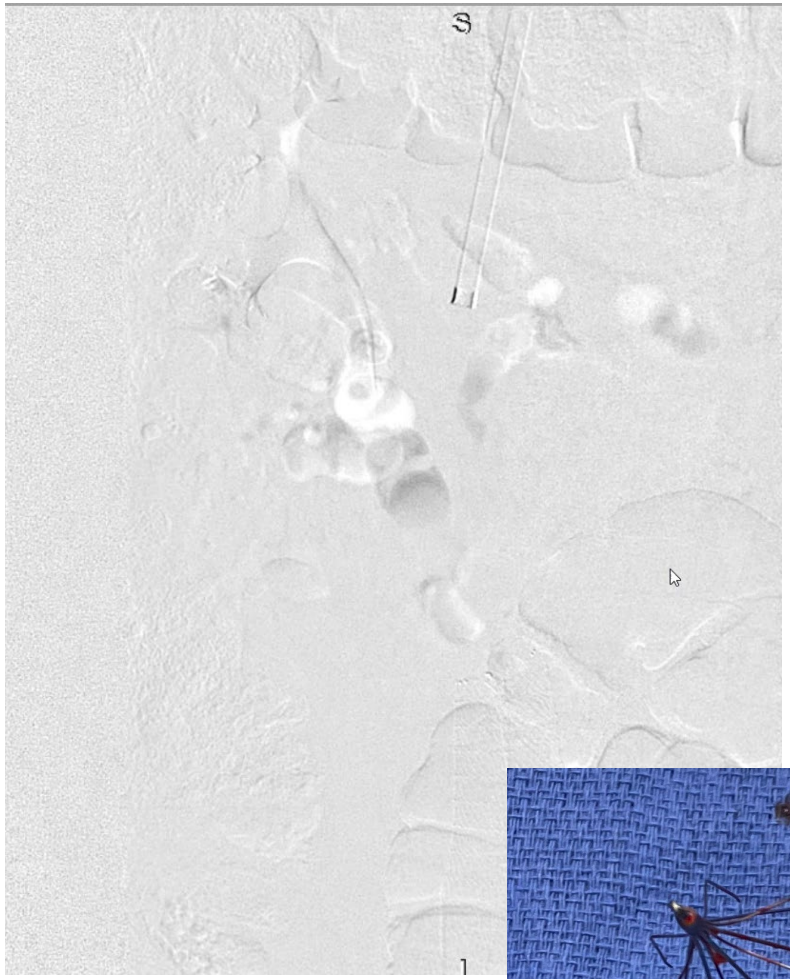
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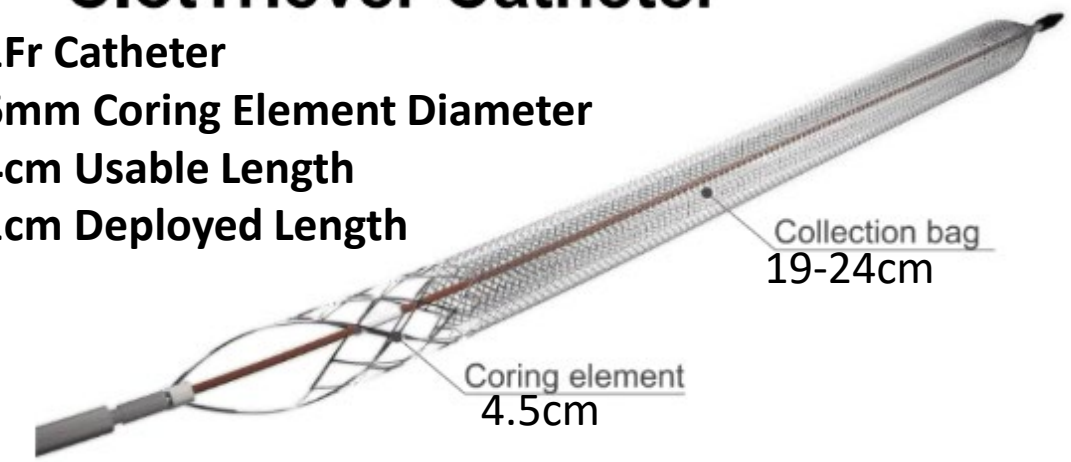
ClotTriever- Inari

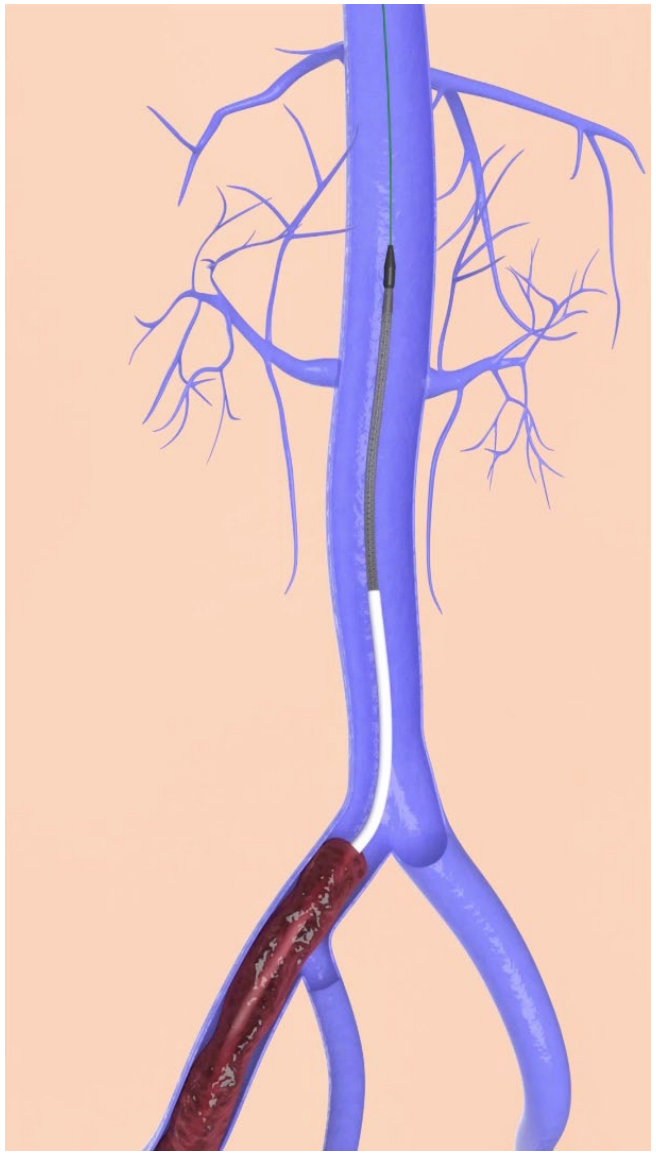
ClotTriever Sheath

13 or 16Fr Sheath
15cm Length
14mm Funnel Diameter

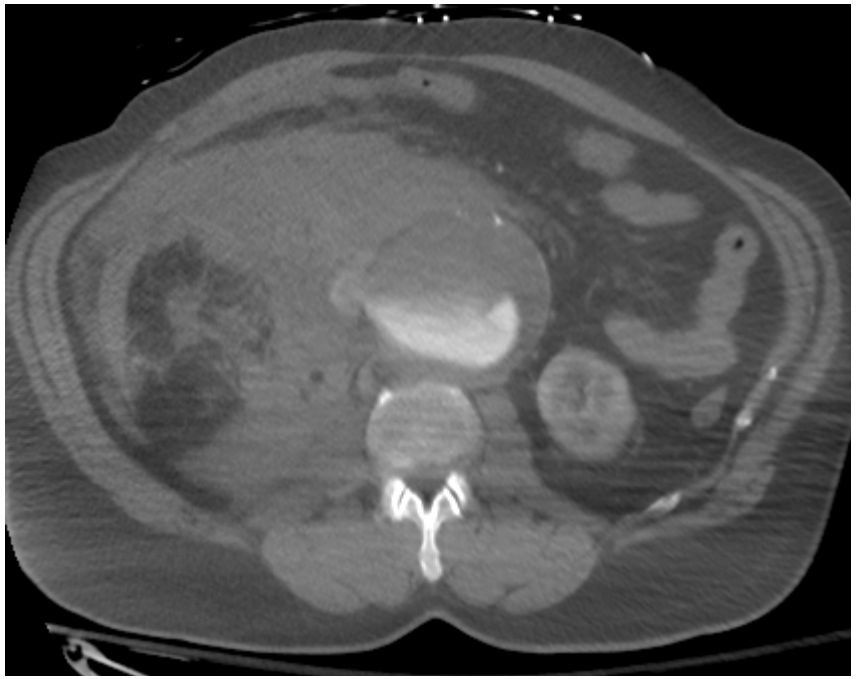
ClotTriever Catheter

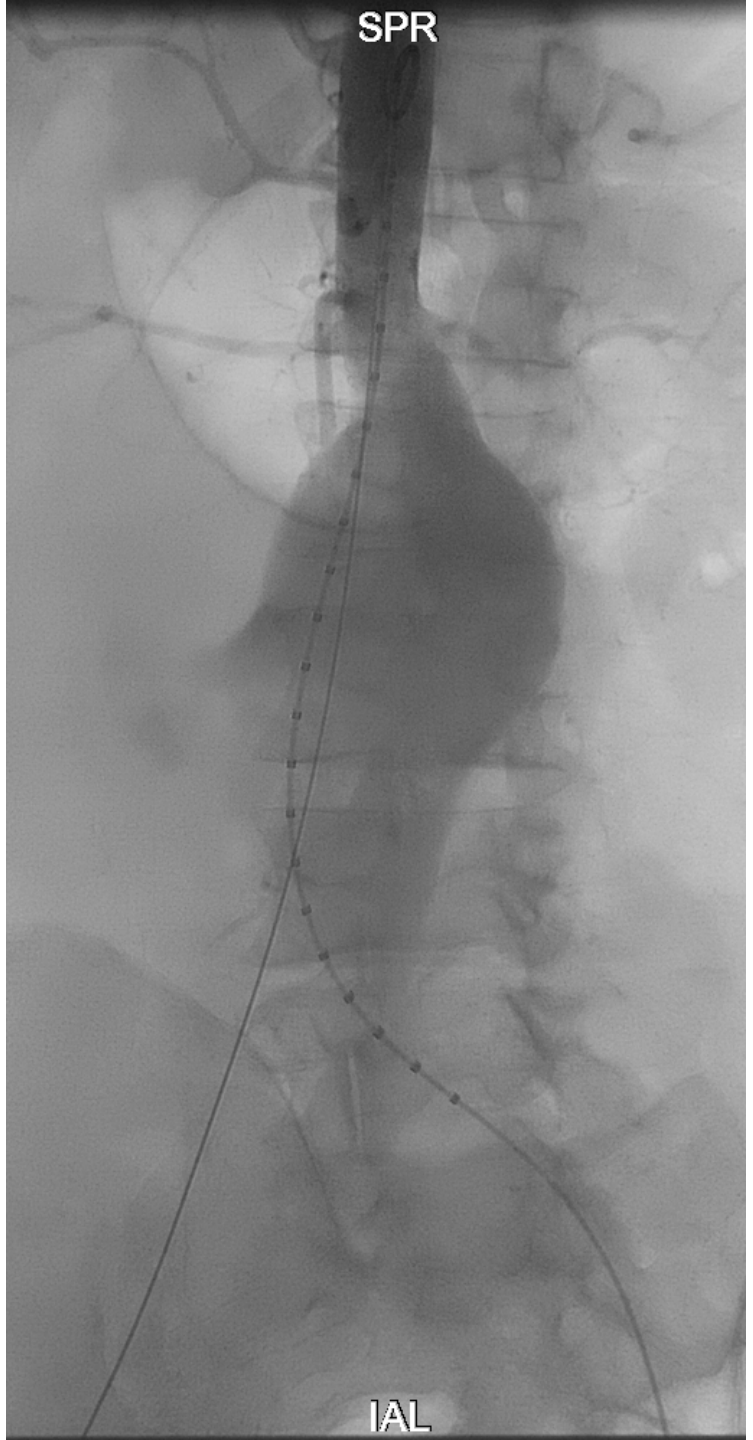
11Fr Catheter
16mm Coring Element Diameter
74cm Usable Length
31cm Deployed Length

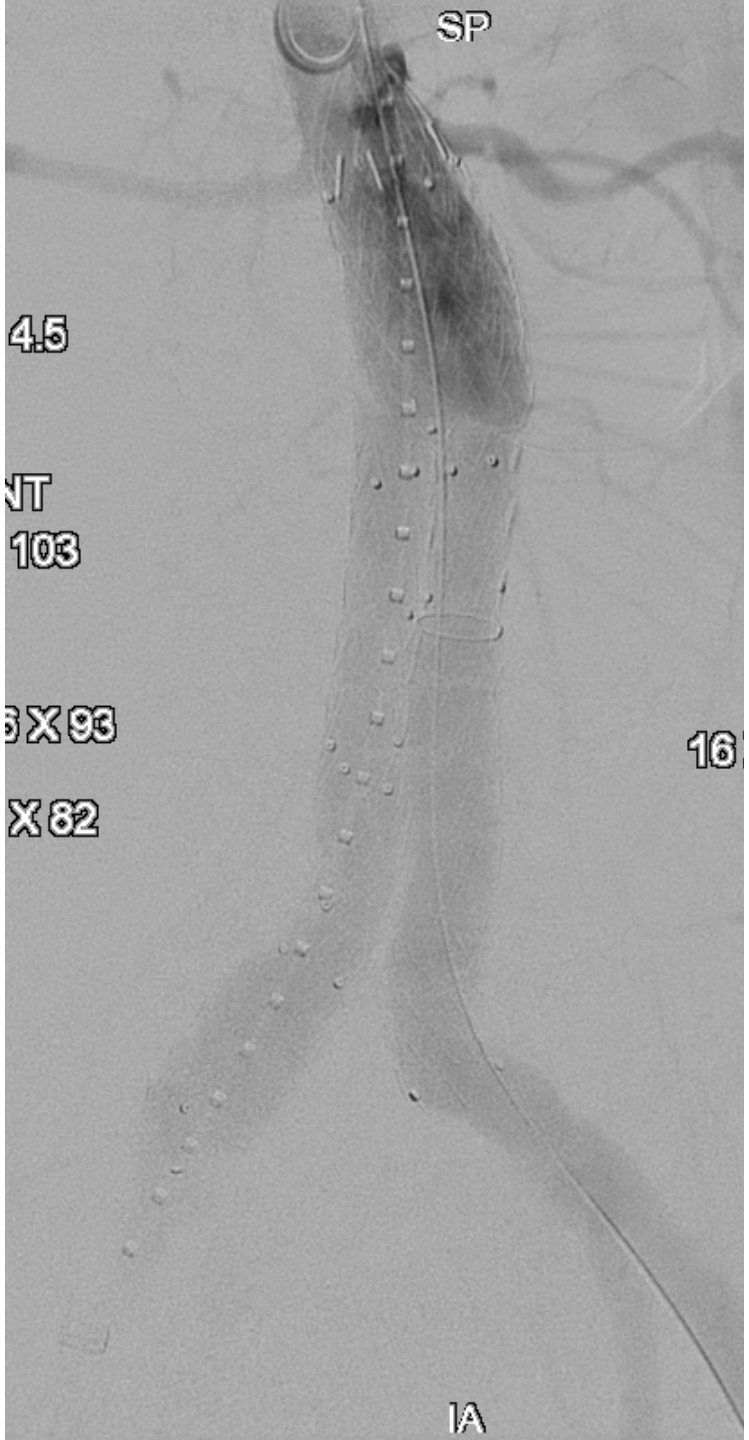


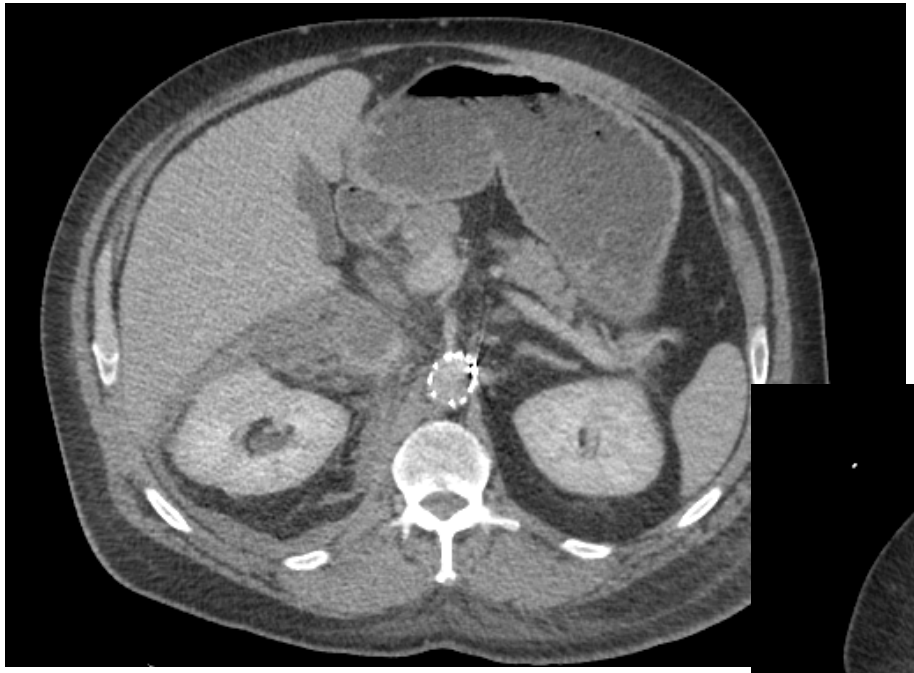


- 54 y.o. male rAAA – EVAR
- POD # 2 Thrombocytopenia – HIT
- POD # 3 Left Iliocaval DVT
- Swelling / pain and numbness for >48h

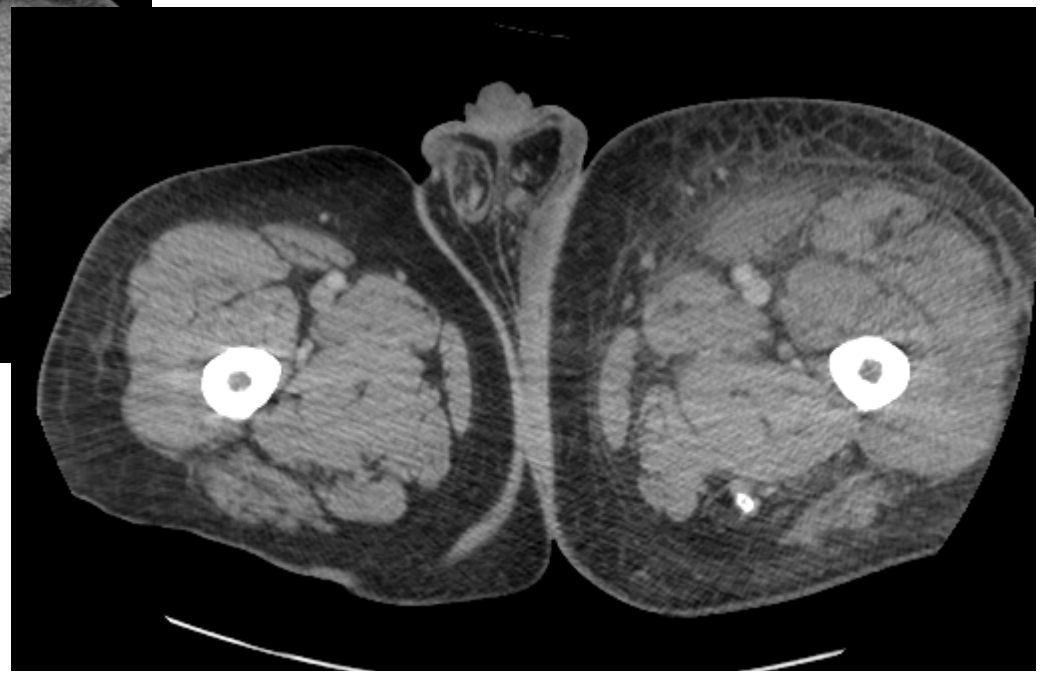








Left external iliac vein thrombus

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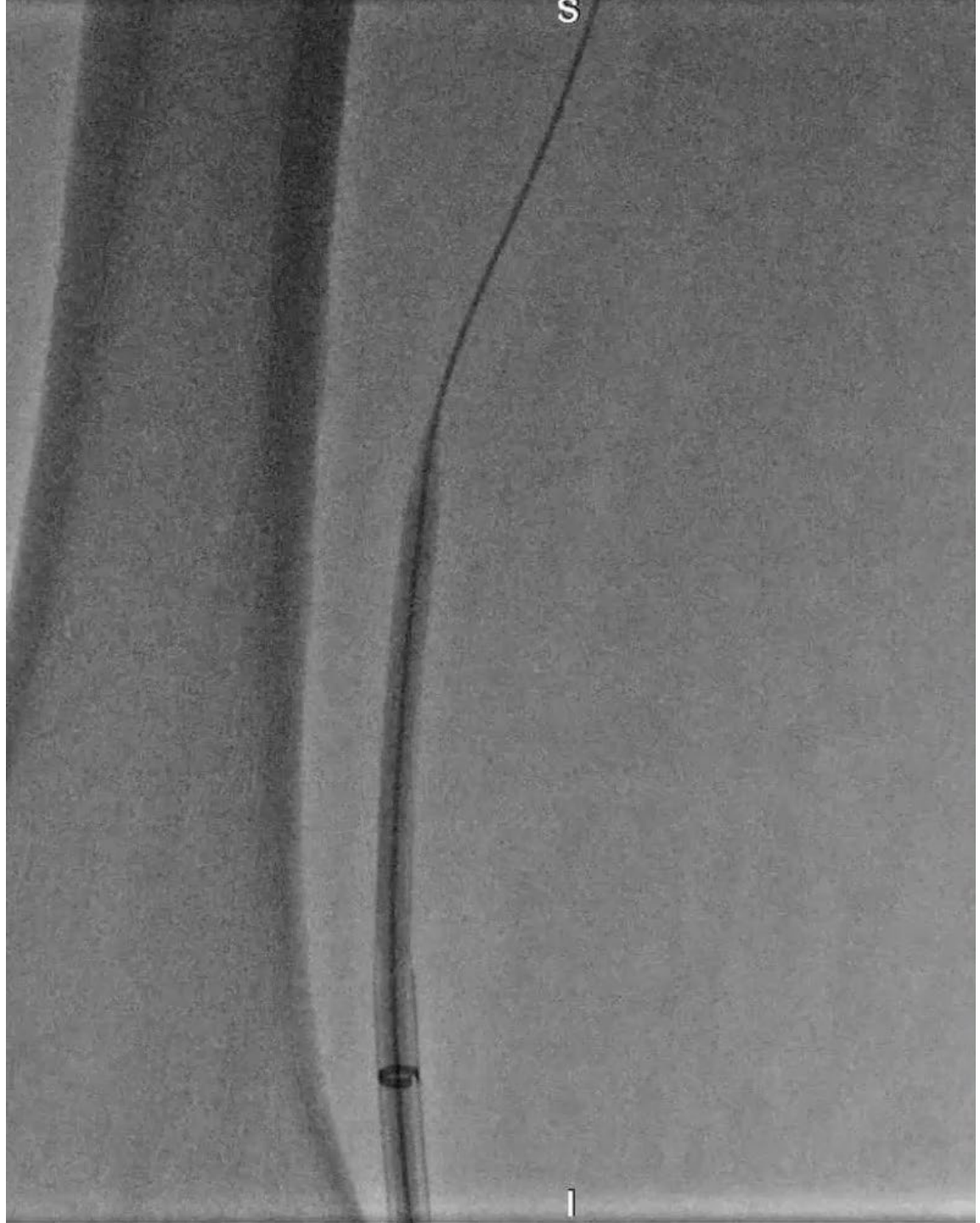
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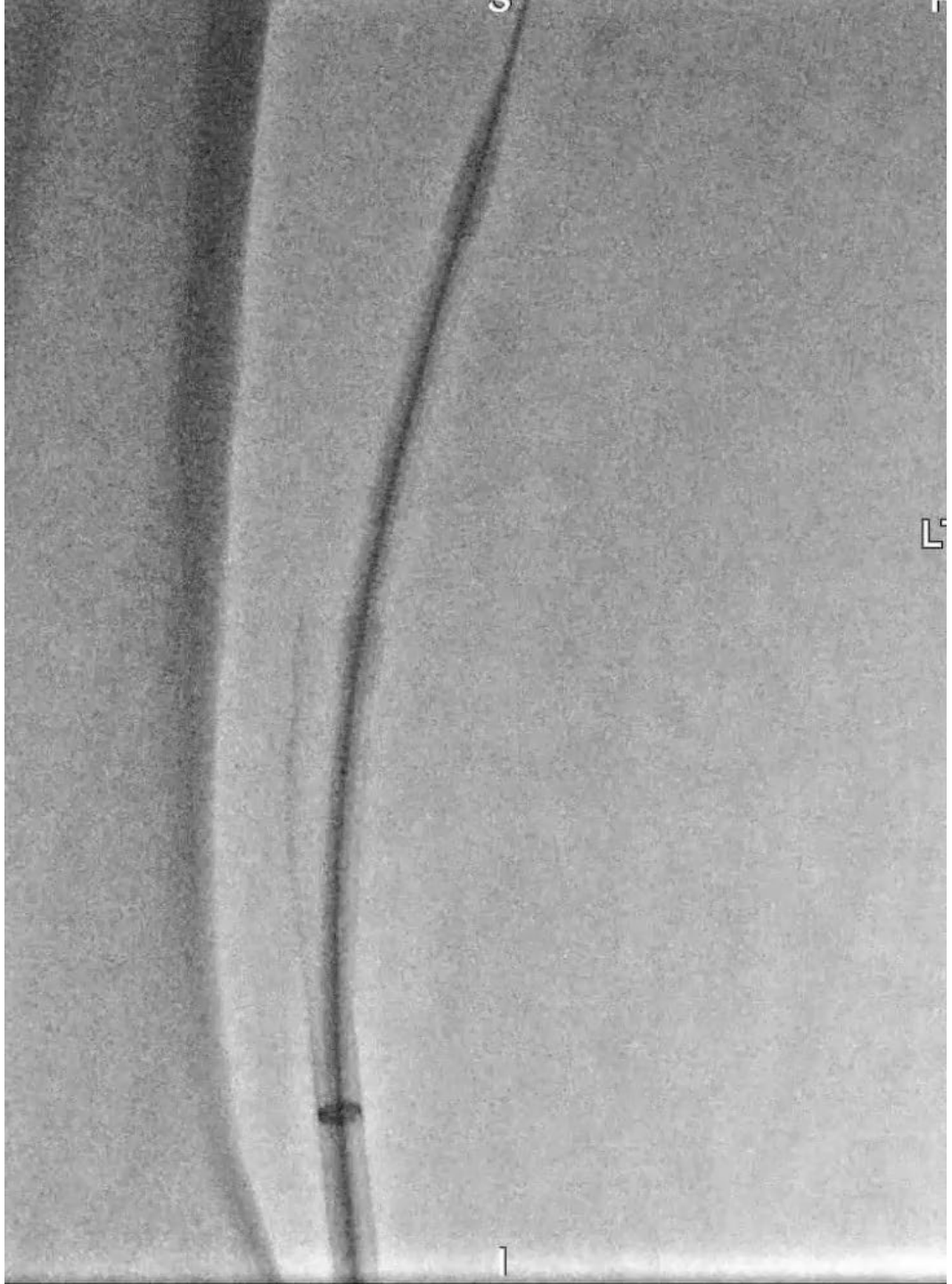
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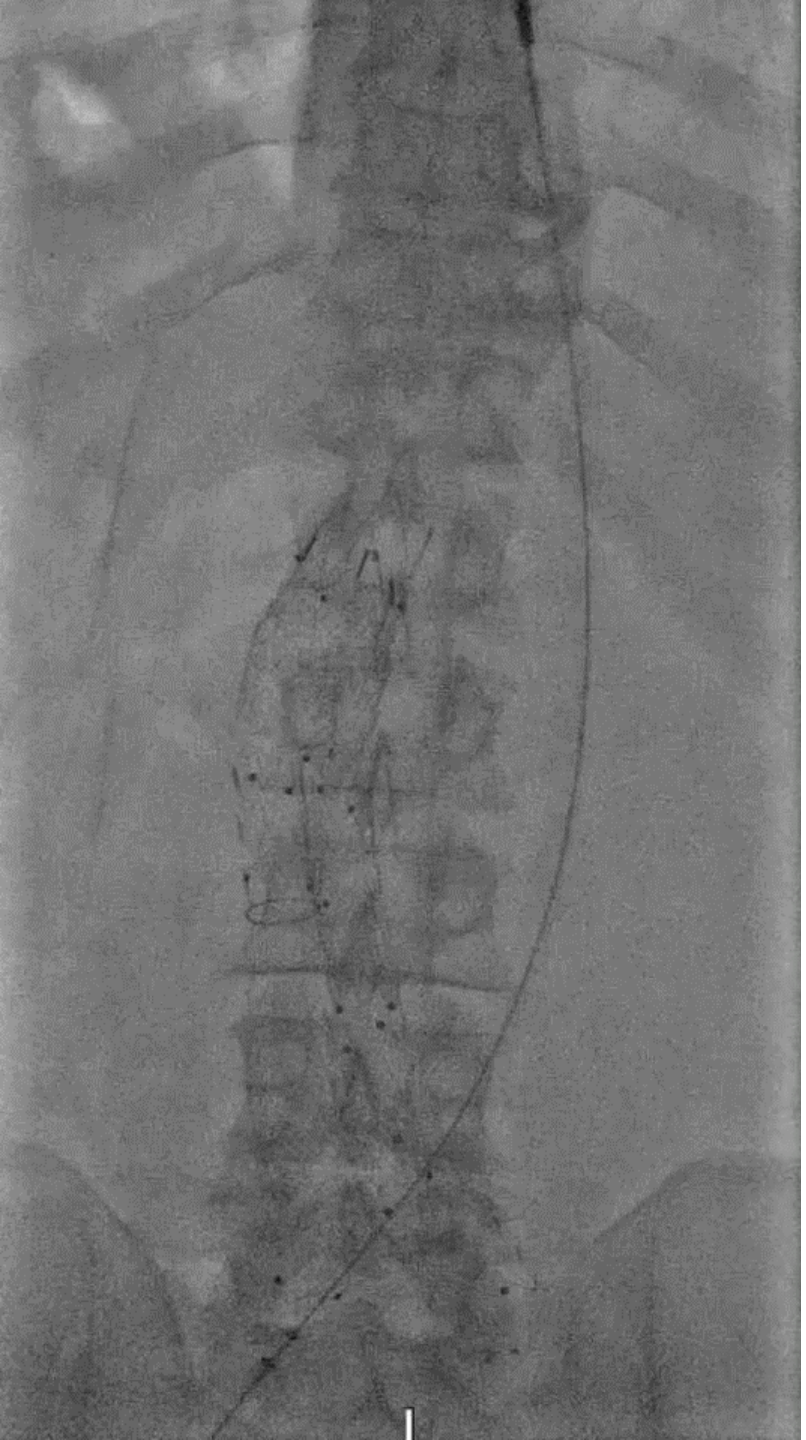

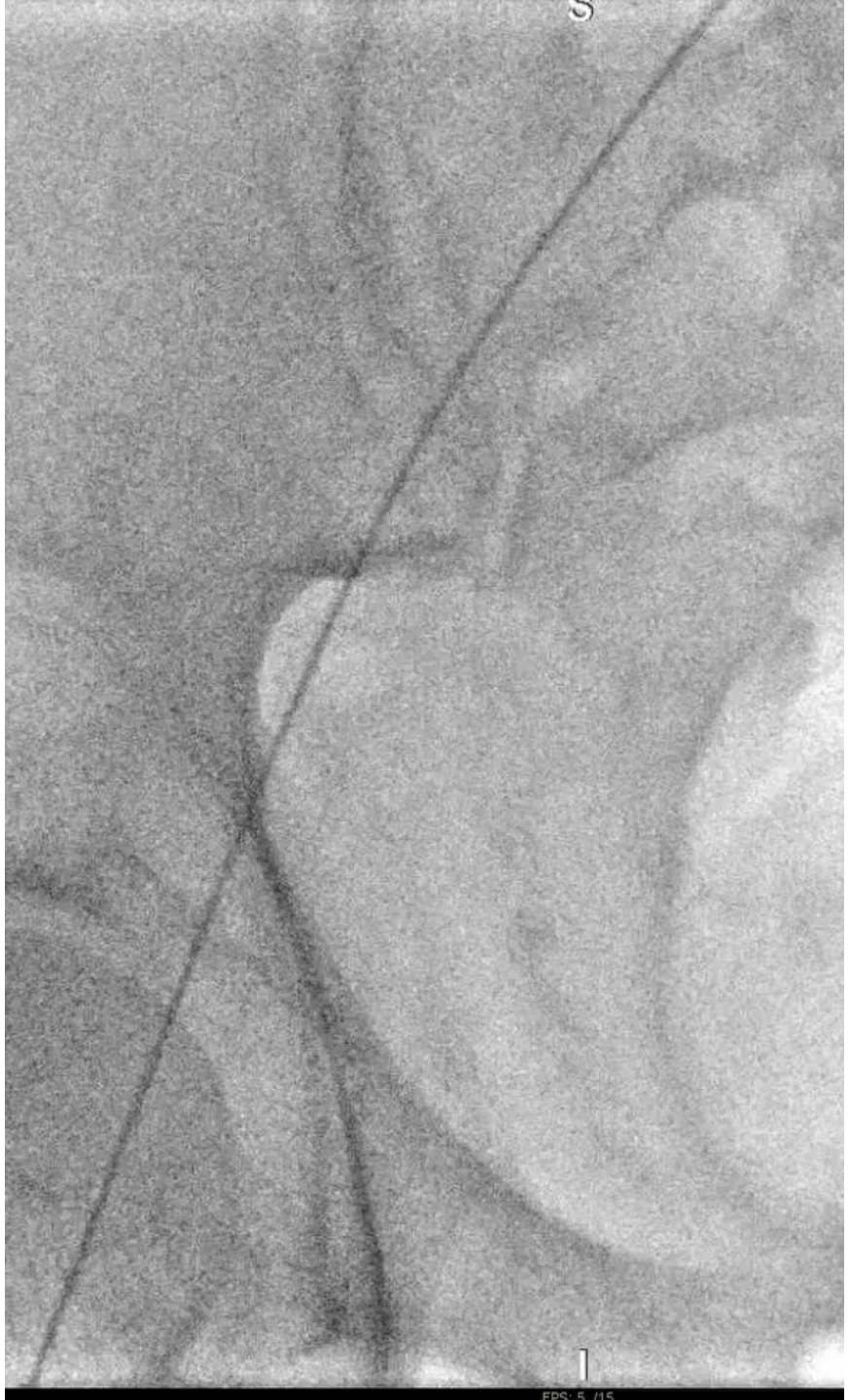

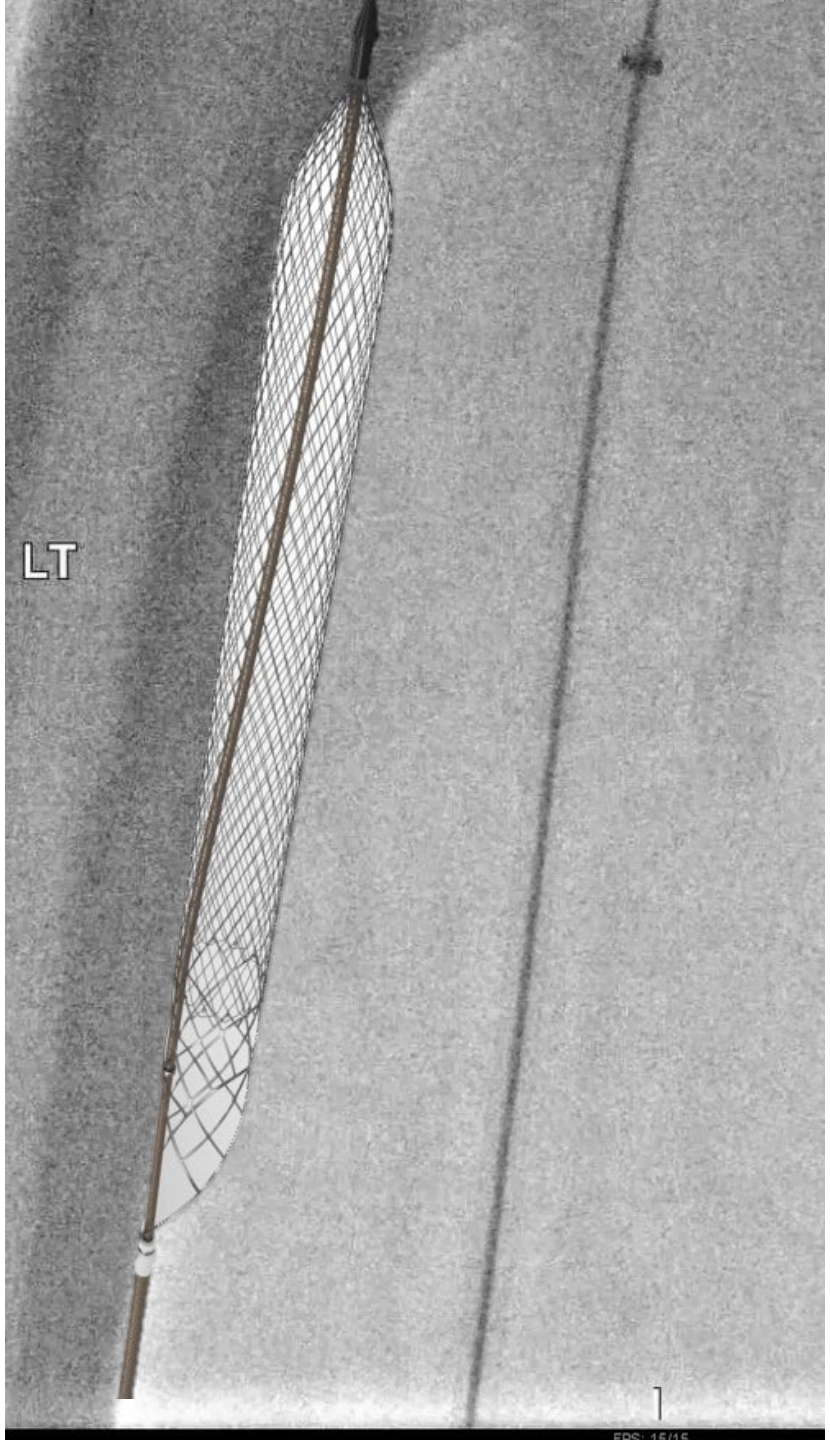
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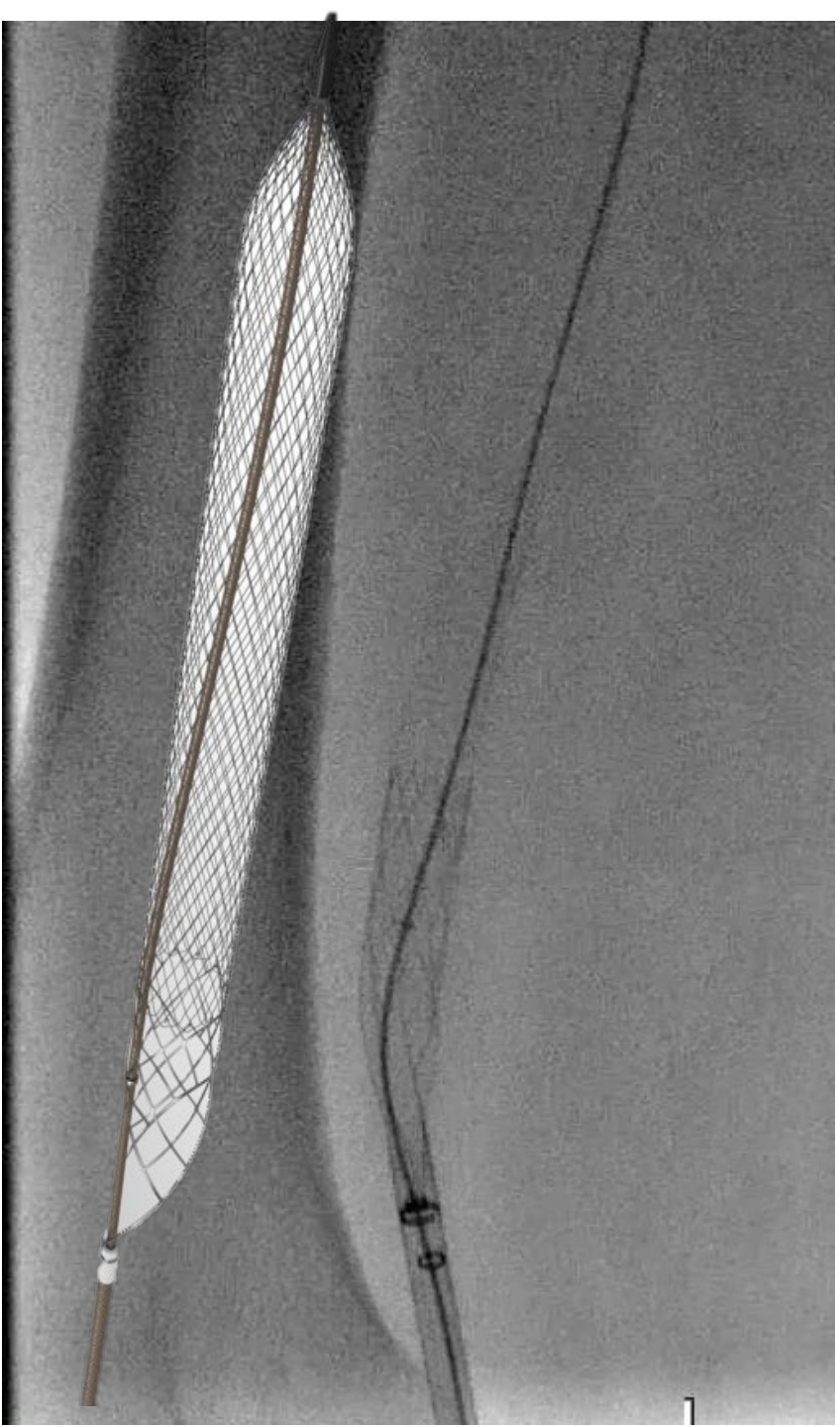


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Take Away Messages

- Acute DVT is on the rise
- Most frequently seen in hospital patients and malignancies
- Don’t forget anticoagulation prophylaxis for inpatients
- Treatment is anticoagulation for the vast majority of patients
- Lifestyle changes and compression will alleviate symptoms
- Invasive treatments of thromboaspiration are meaningful for **symptomatic** iliofemoral DVTs and in patients with good life expectancy (PTS prevention)

Thank you for your attention!

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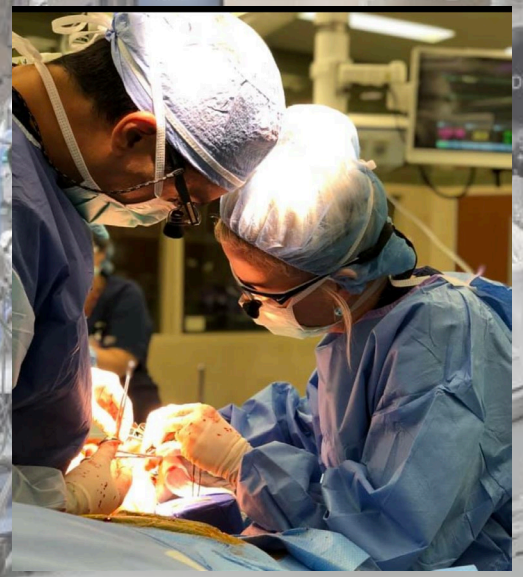
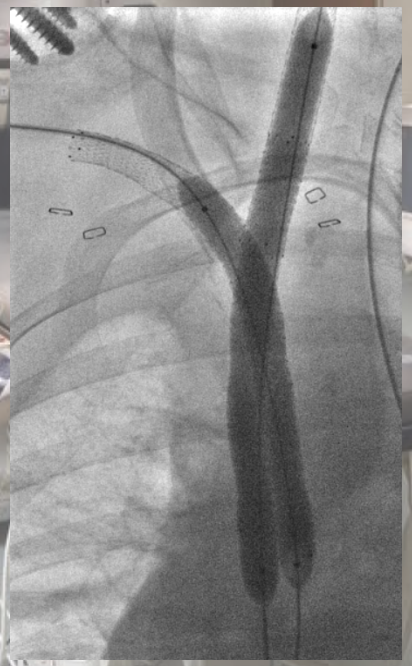
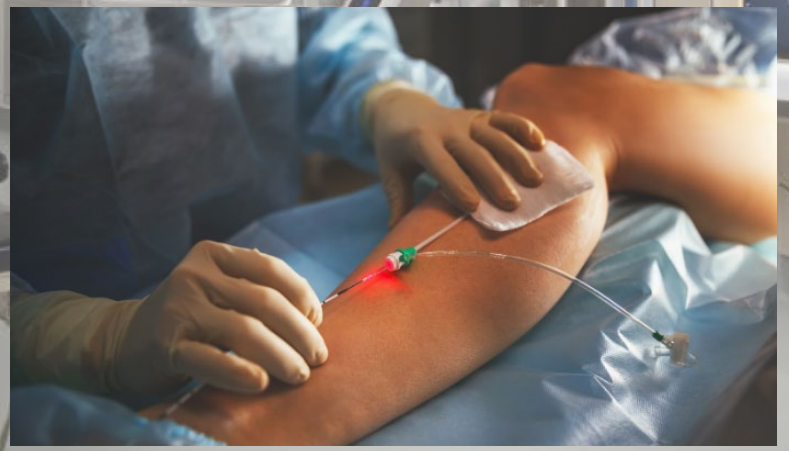
@makisavgerinos







Interested in Vascular Surgery?