DEEP AND SUPERFICIAL VENOUS DISEASE

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DISCLOSURE

Speaker name: **Kathleen Gibson, MD**

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I have the following potential conflicts of interest to report:

Consulting: Boston Scientific, Gore, Medtronic, Philips, Terumo, Vesper

Employment in industry

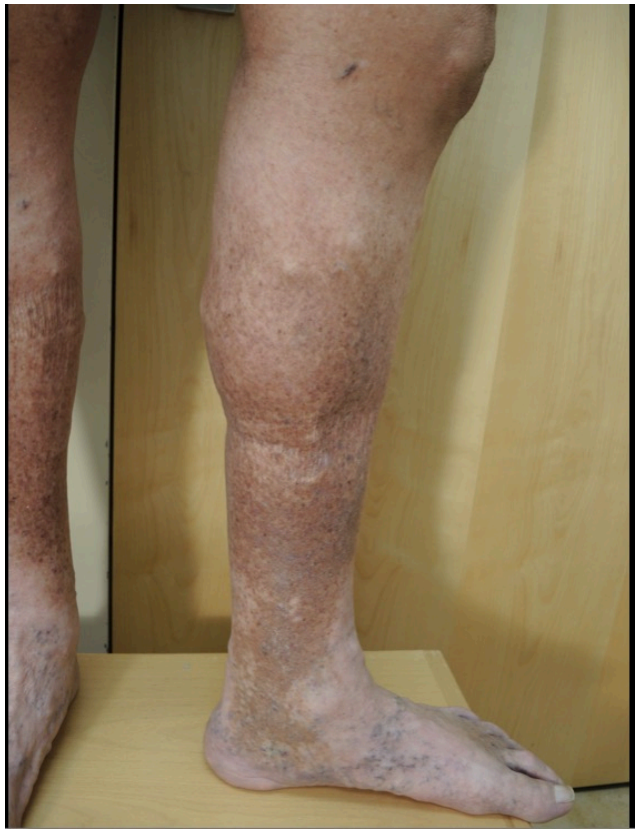
Stockholder of a healthcare company

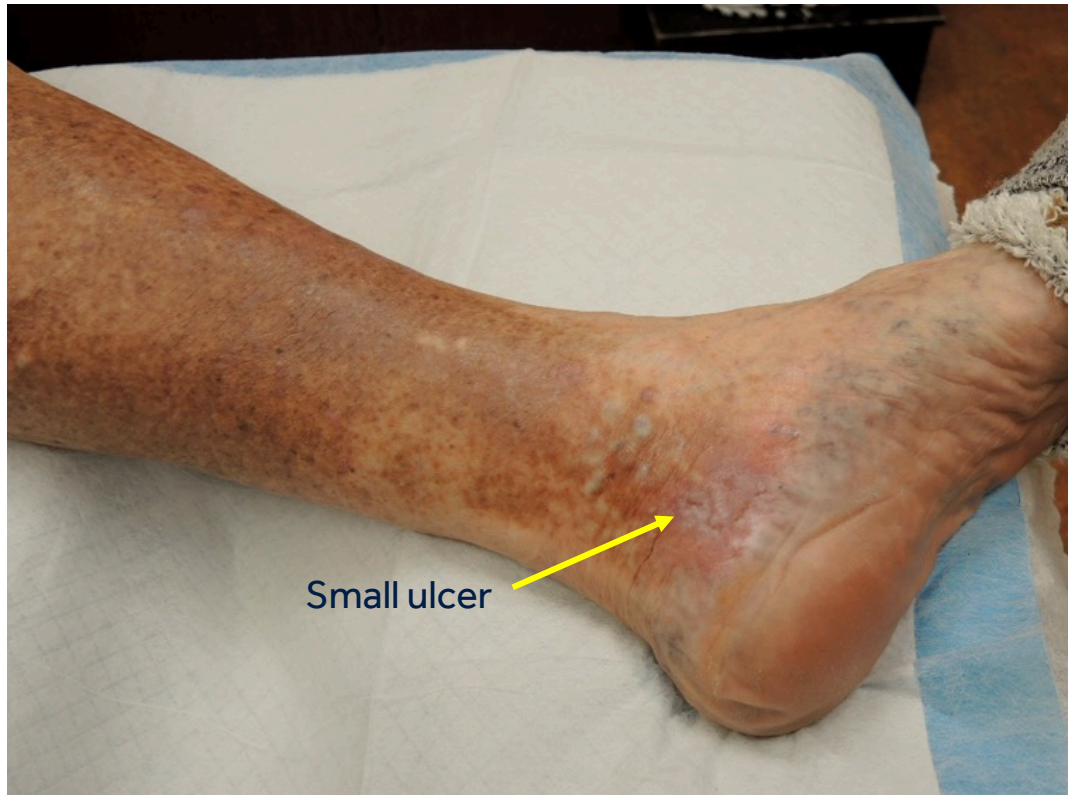
Owner of a healthcare company

Other(s): Speaker-BMS, Janssen

PATIENT BACKGROUND
DEEP AND SUPERFICIAL VENOUS DISEASE

Patient is an active gentleman, presenting in 2017 who works in maintenance who presents with complaints of edema, leg fullness and pain with exercise, small ulceration (healed with compression)





Images courtesy Kathleen Gibson, MD

PATIENT HISTORY & VENOUS METRICS

Patient Profile

- Early 60's, male
- Otherwise, healthy except for mild hypertension
- Active job and likes to exercise

Medical History

- History of bilateral DVT, one after travel (left, 2007), one after knee surgery (right)
- No known hypercoaguable state
- Chronic anticoagulation after second DVT-first with warfarin, now on Eliquis
- Bilateral edema, Left>right, controlled with 20-30 mm Hg stockings
- Extent of left DVT not known (not lysed)

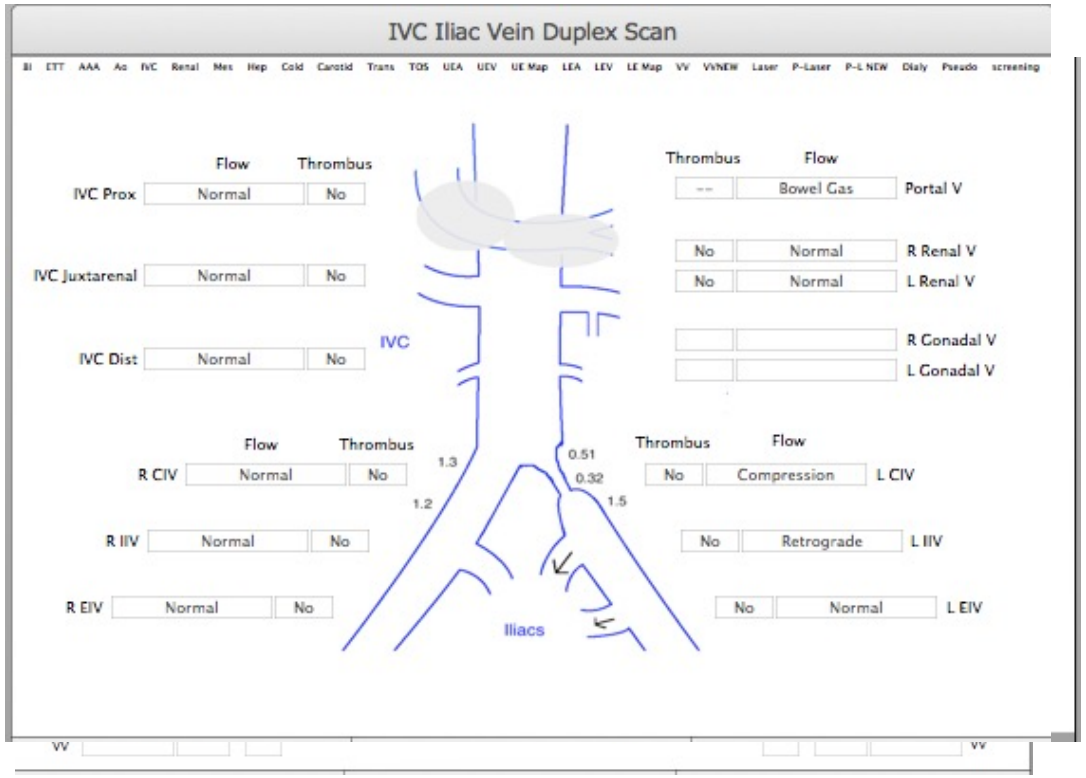
Symptoms

- Fullness and pain in left calf with exercise
- Has had small ulcerations in left inframalleolar area, healed quickly, but painful
- Has had bleeding from telangiectasias at the ankle (later)

Metrics

- CEAP clinical class 4a on right; 5 on left
- Villalta: 19 (pain 2, cramps 2, heavy 3, paresthesia 0, pruritis 1; edema 2, induration 2, hyperpigmentation 3, redness 1, venous ectasia 3, pain with compression 0)
- rVCSS 19

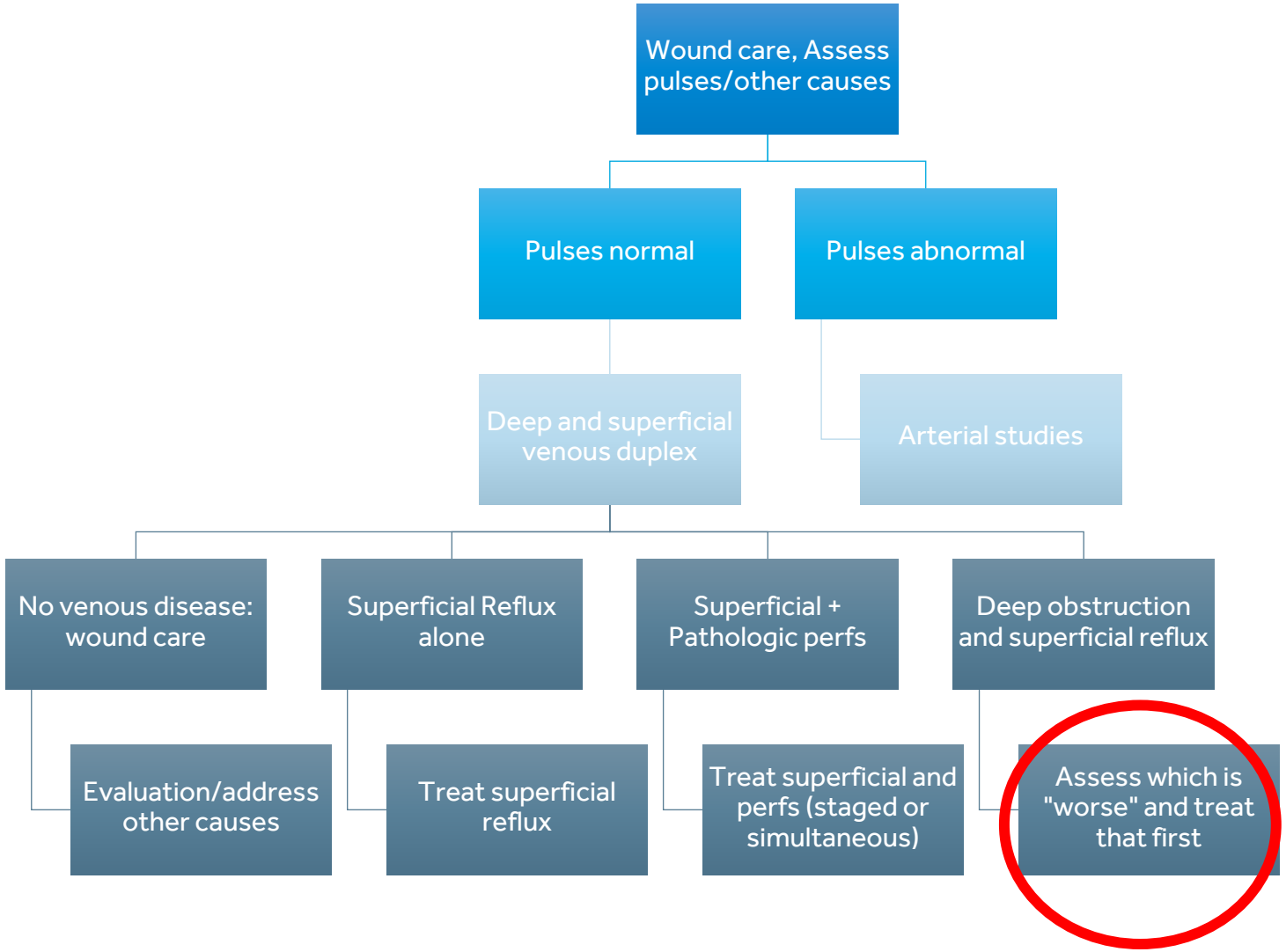
BASELINE ULTRASOUND FINDINGS
DEEP AND SUPERFICIAL SCAN, ABDOMINAL AND PELVIC SCAN



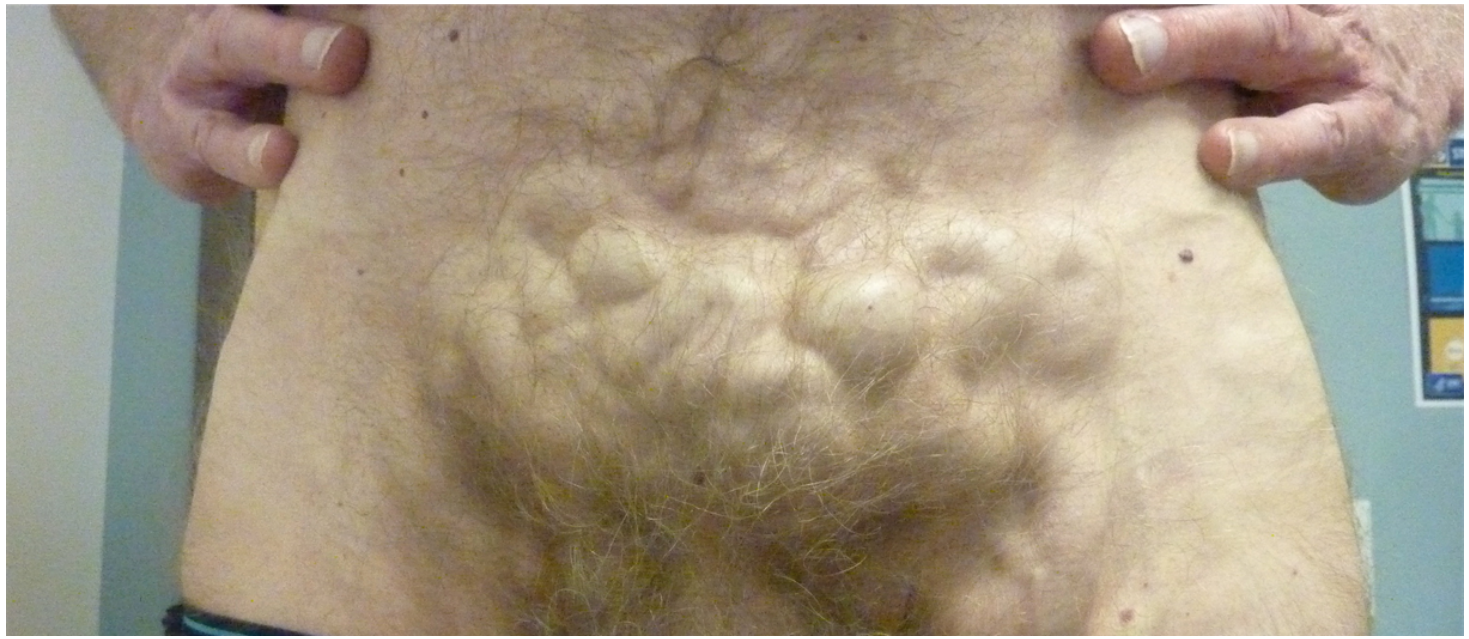
- Bilateral Deep venous reflux
- Obstructive/Post-thrombotic changes left popliteal/tibial veins
- Bilateral GSV and SSV reflux
- GSV maximal diameter 10 mm, 5.4 seconds of reflux to ankle
- SSV maximal diameter 6.1 mm, 3.2 seconds of reflux to mid calf
- Perforator veins medially 4.0, 3.0, 3.5 mm with reflux
- Normal IVC, right iliac
- Left common iliac vein visibly compressed
- Velocity ratio 4.8
- Reversal of flow in left internal iliac vein, visible collaterals

Images courtesy Kathleen Gibson, MD

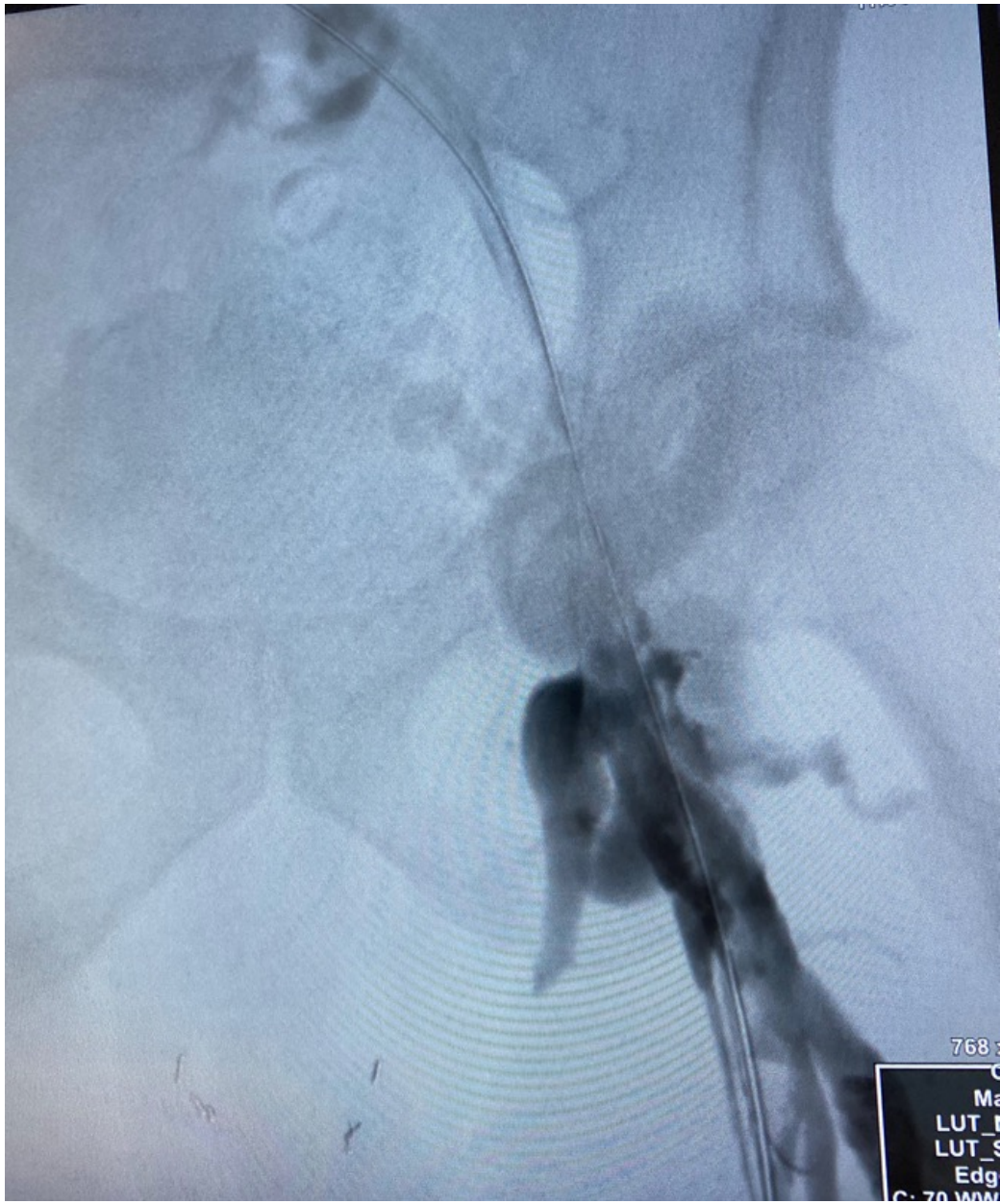
DECISION MAKING
DEEP AND SUPERFICIAL VENOUS DISEASE



SOME CASES ARE OBVIOUS



- 66 year old male
- 8 mm refluxing GSV with LLE varicose veins and edema
- Occluded outflow s/p DVT after motorcycle accident 30 years ago

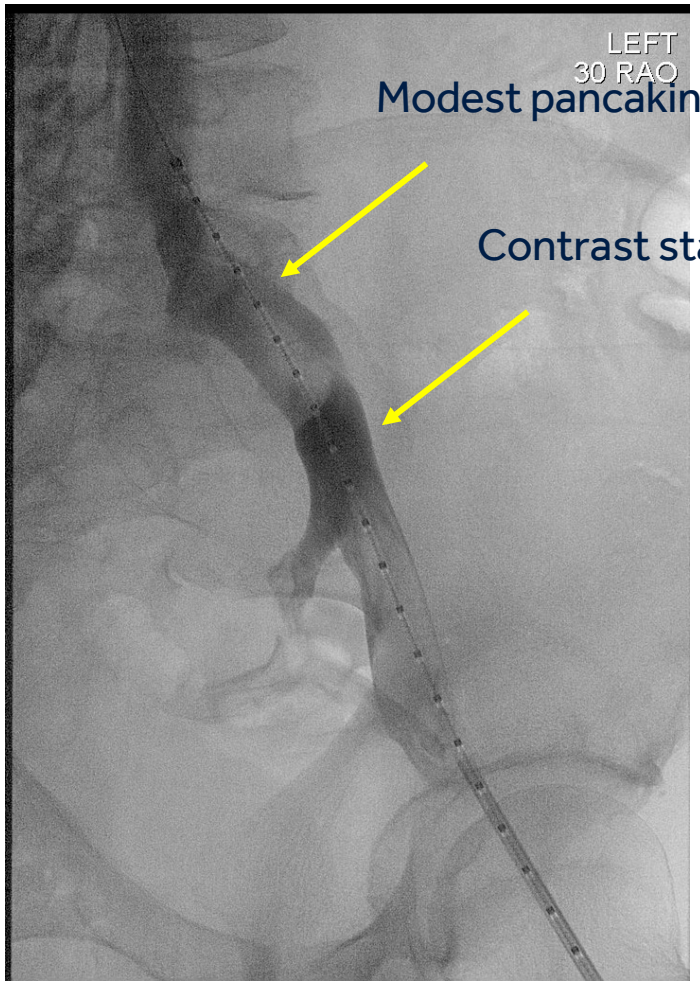


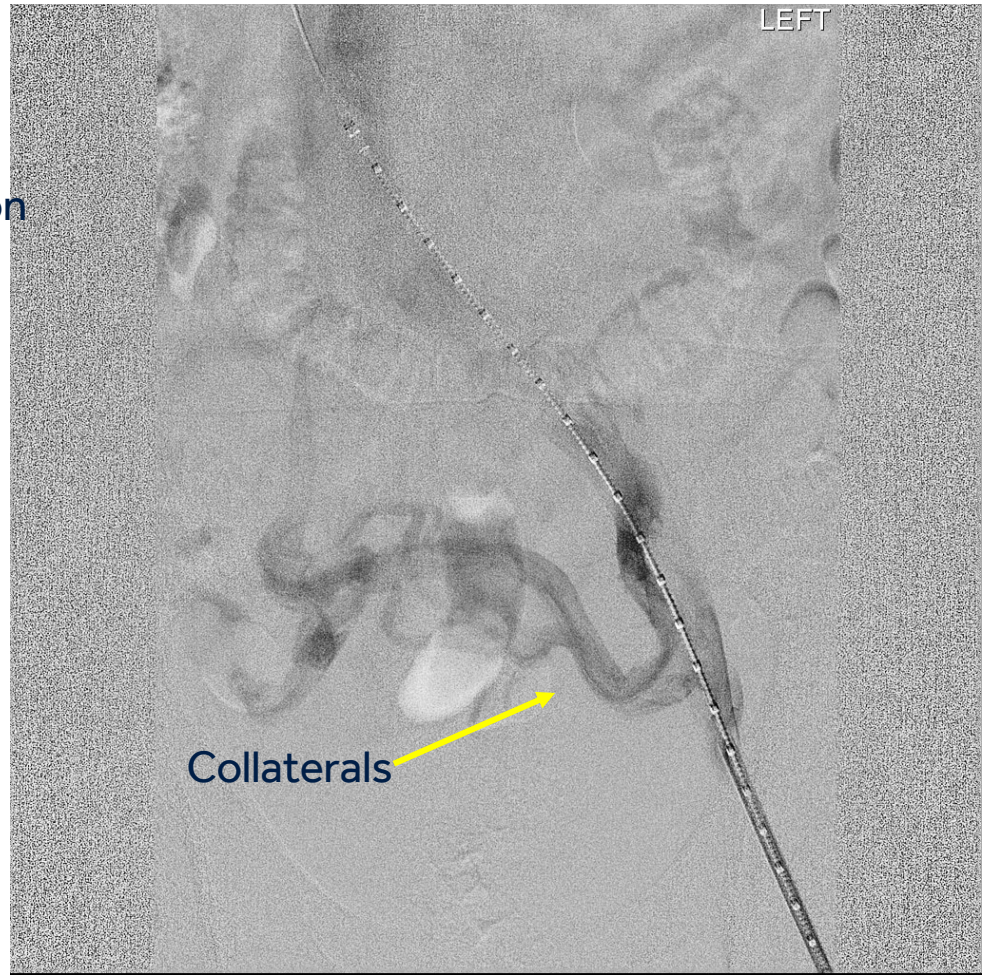
Images courtesy Kathleen Gibson, MD

OTHER CASES ARE MORE SUBJECTIVE
QUESTIONS TO ASK/CONSIDERATIONS

- What are the patient's primary complaints?
- If venous claudication, leg heaviness with exercise?→ treat deep first
- If superficial veins refluxing, but not large diameter?→ treat deep first
- If superficial veins large, NIVL lesion, not severe?→ treat superficial first
- Involve patient in decision making-stents are permanent

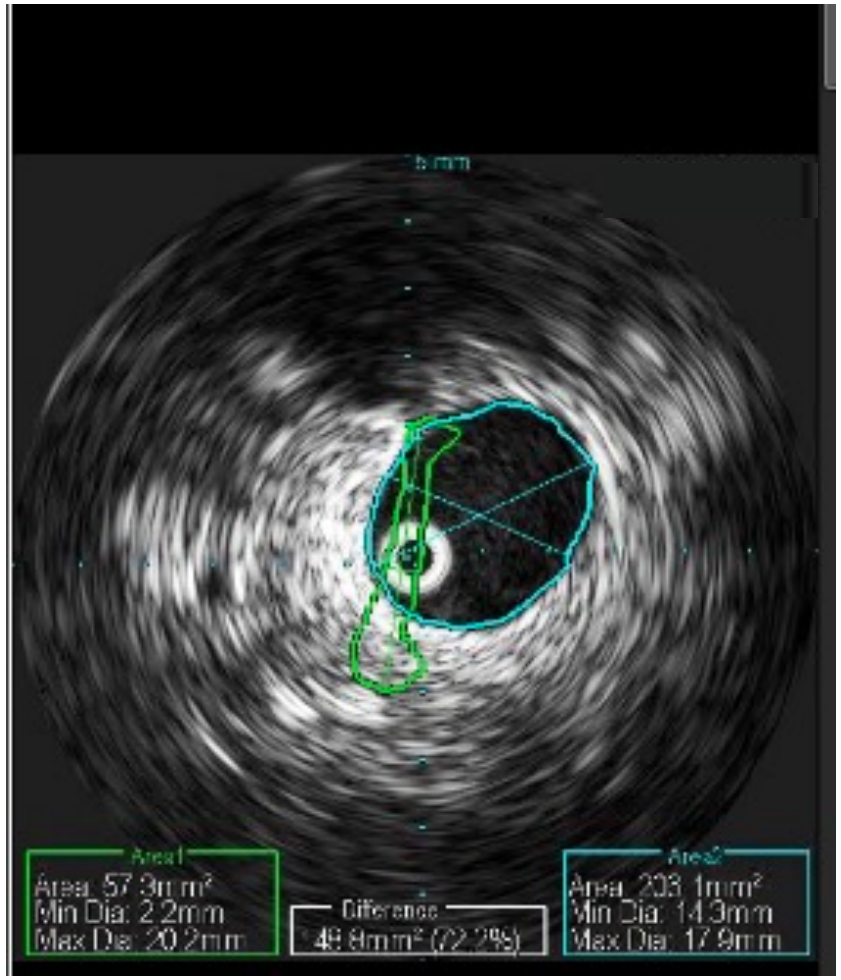
IMAGING
DIAGNOSTIC VENOGRAM





Images courtesy Kathleen Gibson, MD

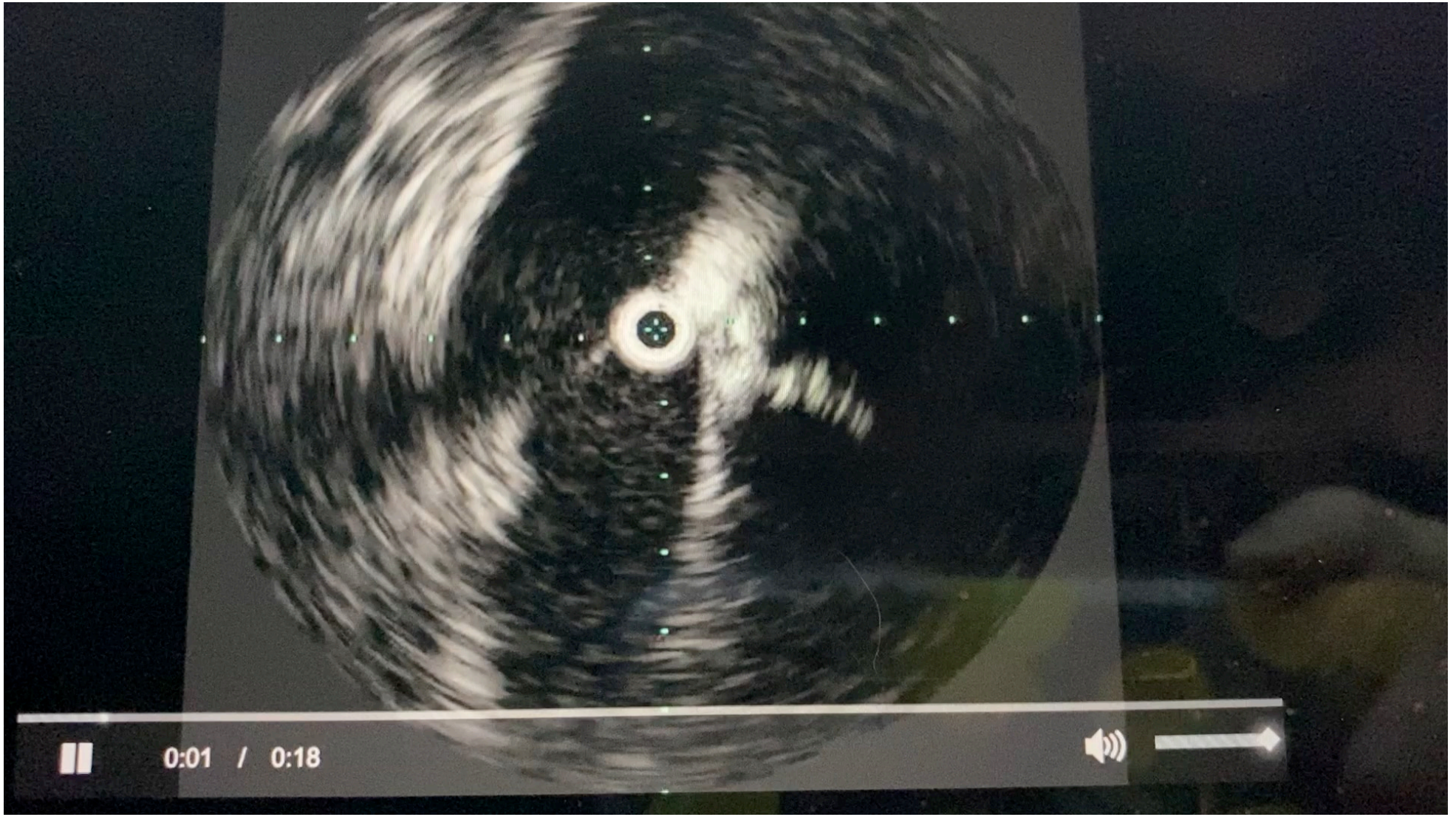
IMAGING
DIAGNOSTIC IVUS



- Cross sectional area in compressed area: 57.3 mm sq
- Cross sectional area in normal segment 203 mm sq
- % reduction: 72%

Images courtesy Kathleen Gibson, MD

IMAGING
DIAGNOSTIC IVUS-LOOP



Images courtesy Kathleen Gibson, MD

DIAGNOSIS AND TREATMENT PLAN

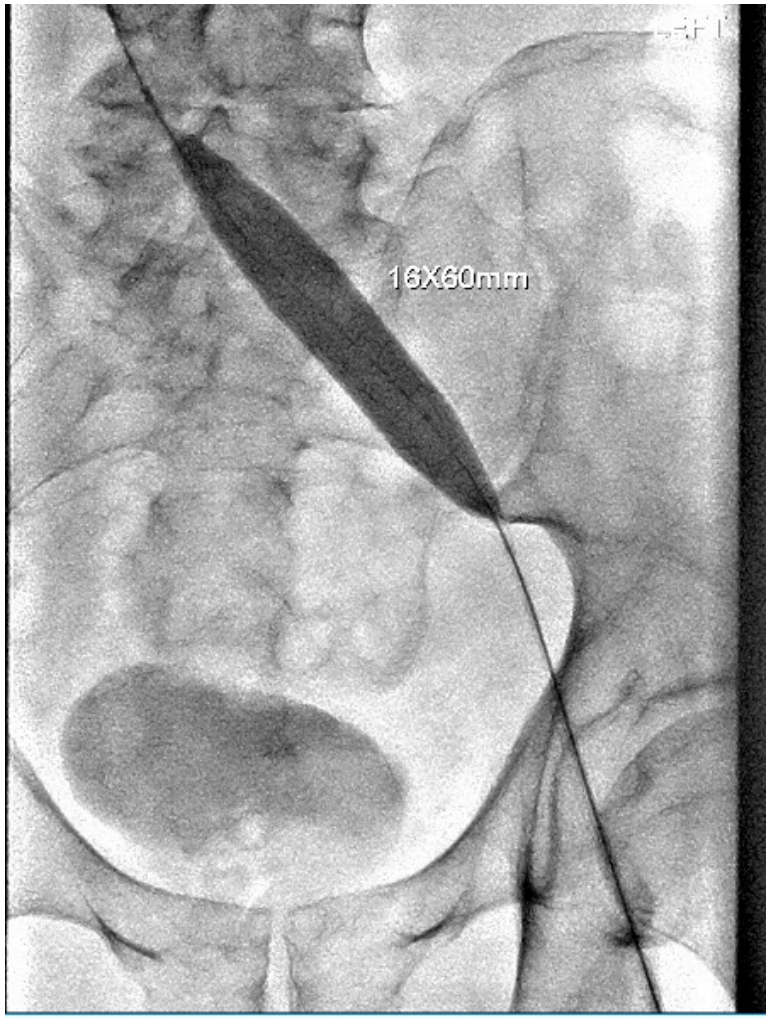
Diagnosis

- Post-thrombotic syndrome
- NIVL v. post-thrombotic iliac
- Venous claudication

Treatment Plan

- Continue anticoagulation
- Left common iliac stent
- Reassess status/need for superficial treatment after stenting

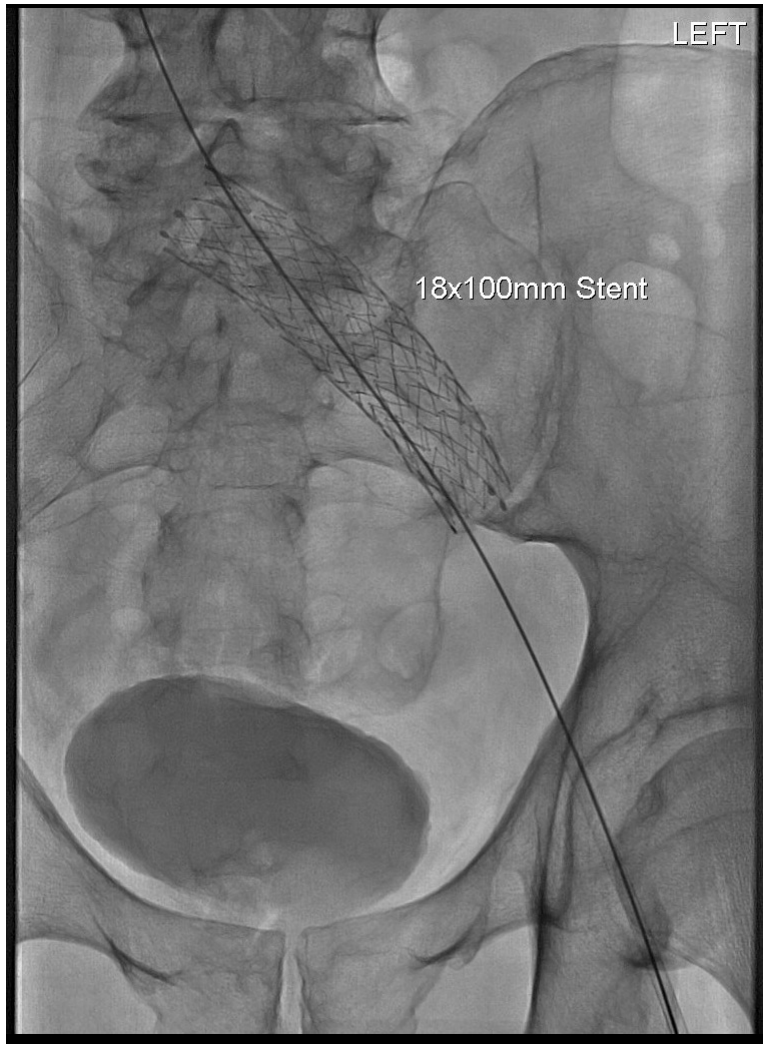
TREATMENT IMAGES
BALLOON DILATION PRE-STENTING

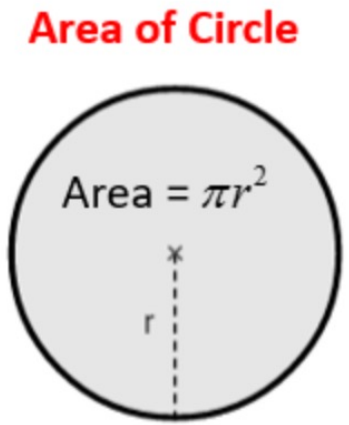


NOTE:
- Pre-dilate to size of intended stent
- NOT done in this case

Images courtesy Kathleen Gibson, MD

VENOUS STENT SIZING

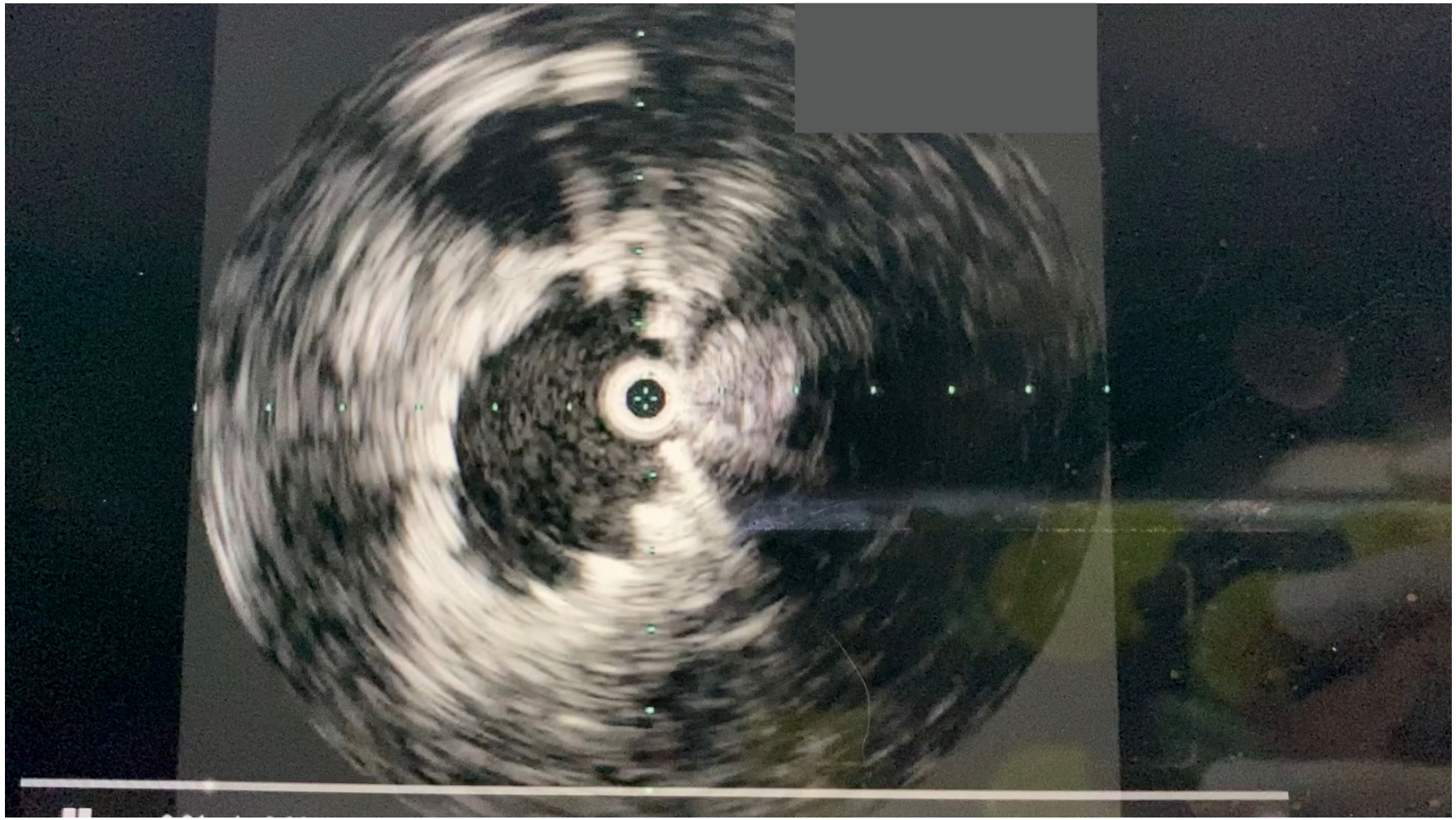




- Size off of: Normal section of vein, contralateral normal vein or known “normal” vein size
- 16.1=2 x (SQRT (203/3.14)
- I chose an 18 x 100 mm Abre™ venous self-expanding stent system
- Post dilated with an 18 x 60 mm balloon
- IMPORTANT: post dilate to size of stent (needed to obtain ideal properties of nitinol alloy)

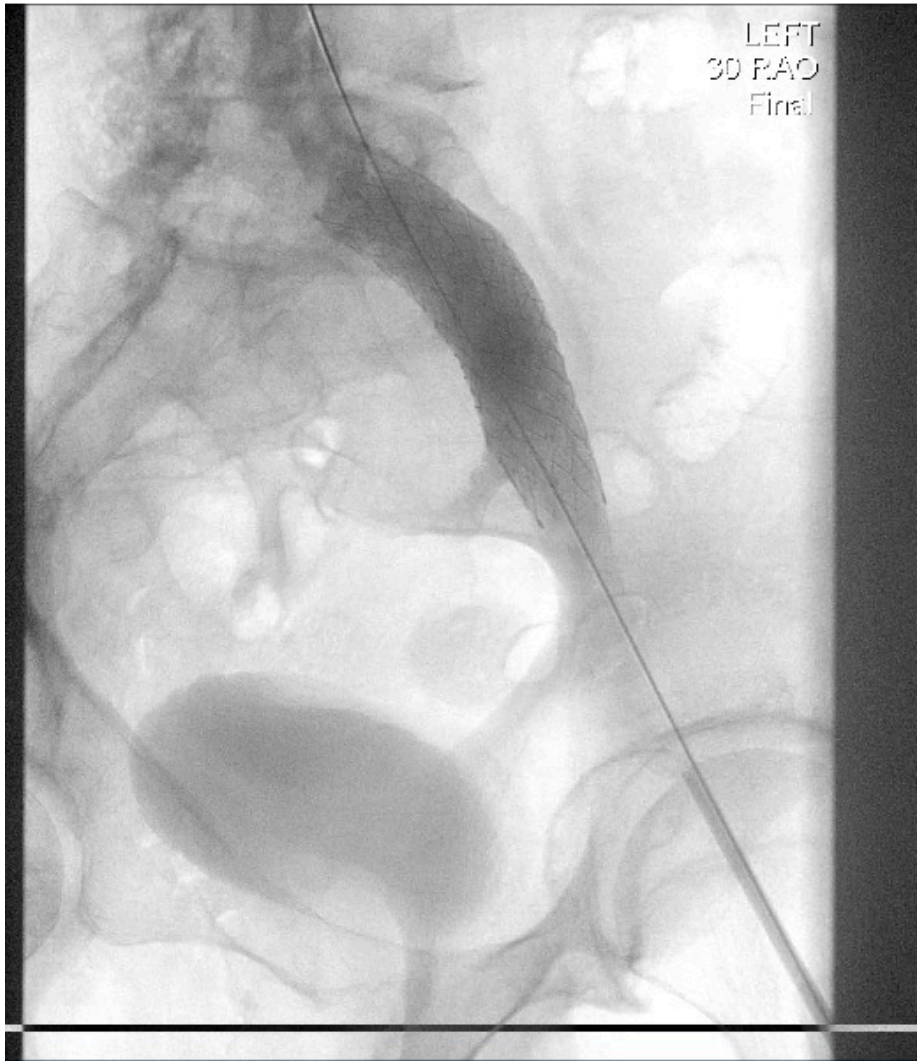
Images courtesy Kathleen Gibson, MD

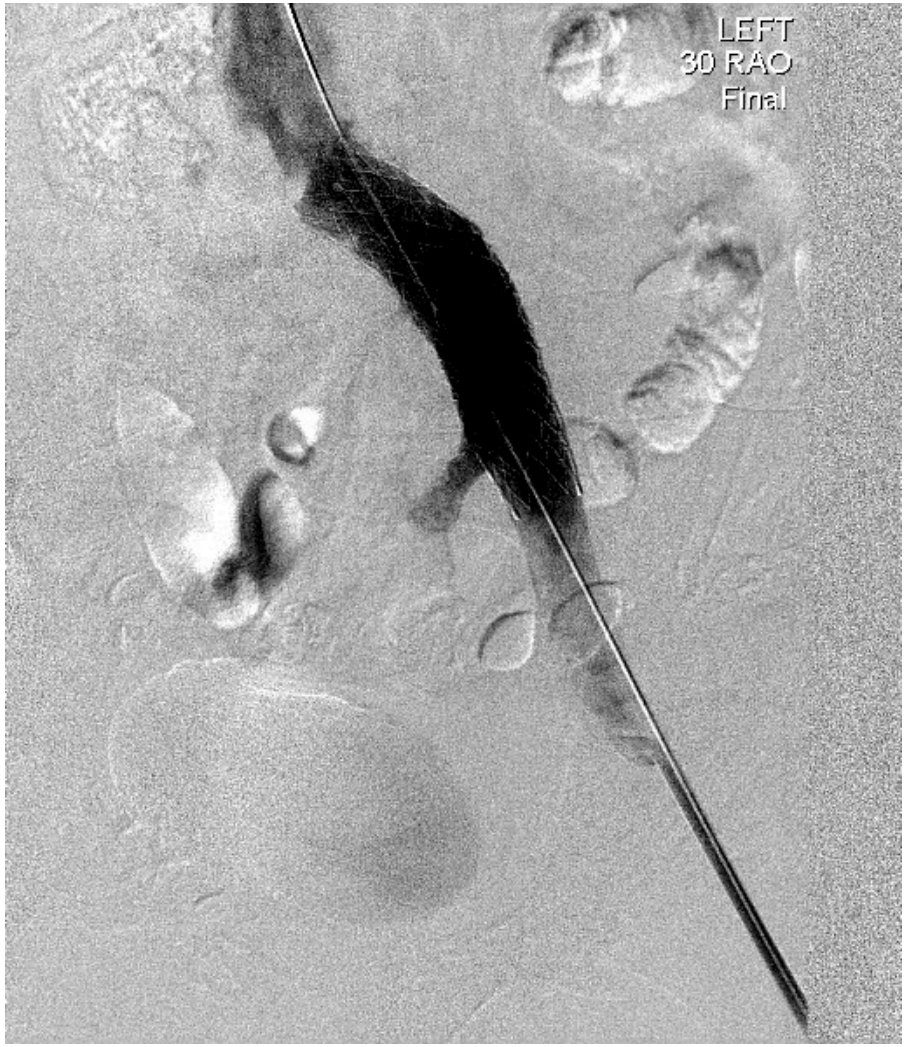
IVUS IMAGING VIDEOS
POST STENT IVUS LOOP



Images courtesy Kathleen Gibson, MD

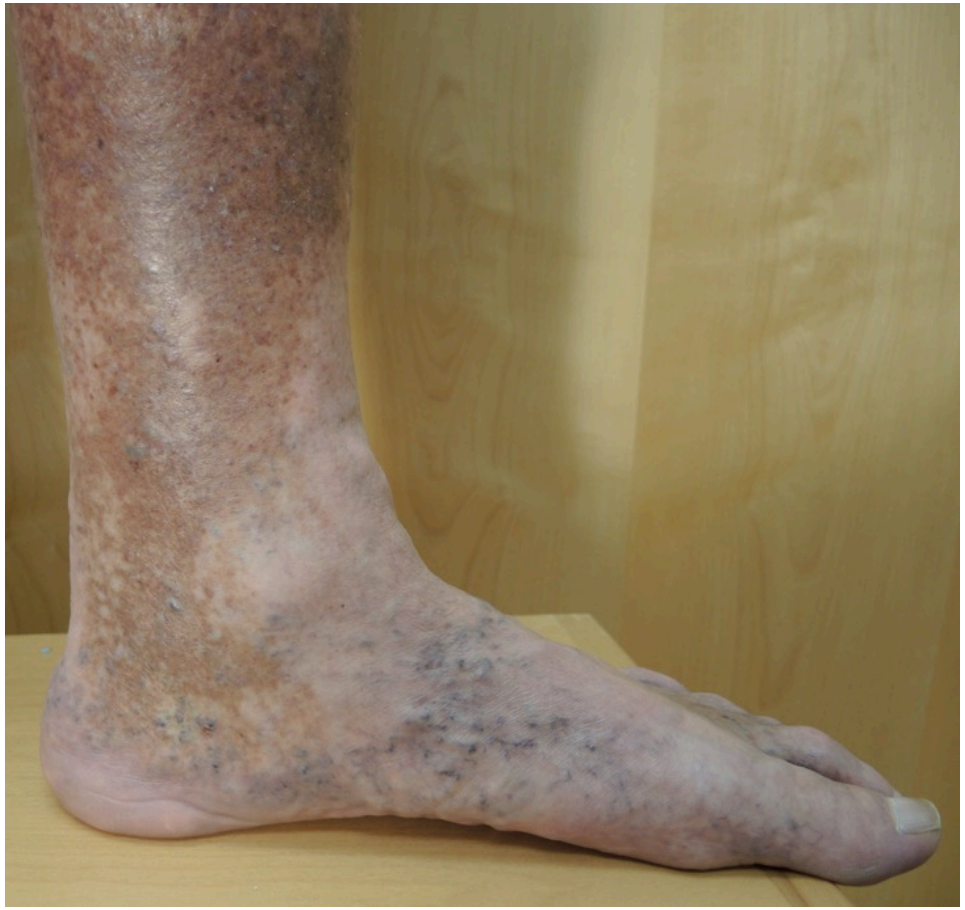
VENOGRAPHY





Images courtesy Kathleen Gibson, MD

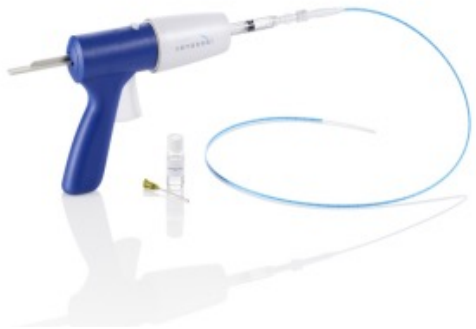
POST OP COURSE



- Expected clinical course-one week of back pain
- Given history, treated with 3 weeks of enoxaparin followed by 6 months of warfarin, and then transitioned to Eliquis 2.5 mg po BID
- Leg heaviness/pain with exercise resolved
- Edema improved, but continues to wear compression stockings
- Did well until episode of bleeding from telangiectasia at foot, more discomfort from varicose veins in 2019

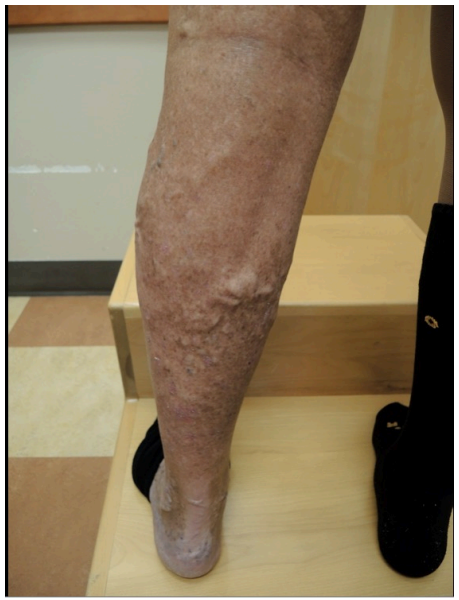
Images courtesy Kathleen Gibson, MD

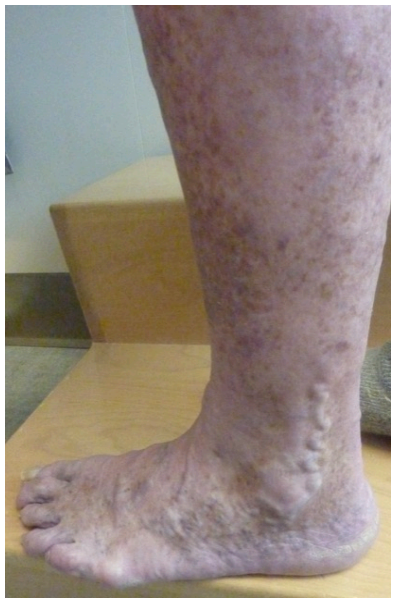
SUPERFICIAL VEIN TREATMENT



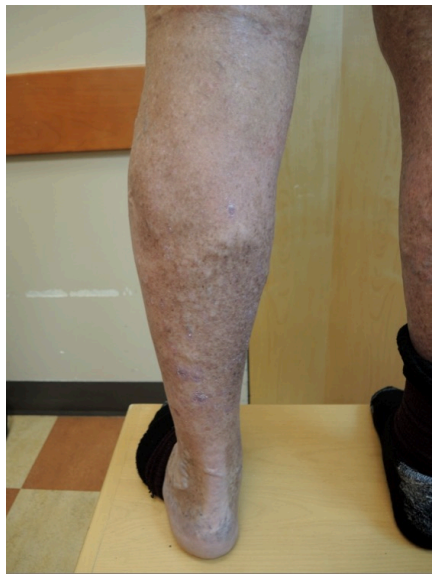
- **Treated GSV and SSV with VenaSeal™ closure system**
- Sclerotherapy of veins that bleed in foot
- Did not stop anticoagulation (Eliquis™*)

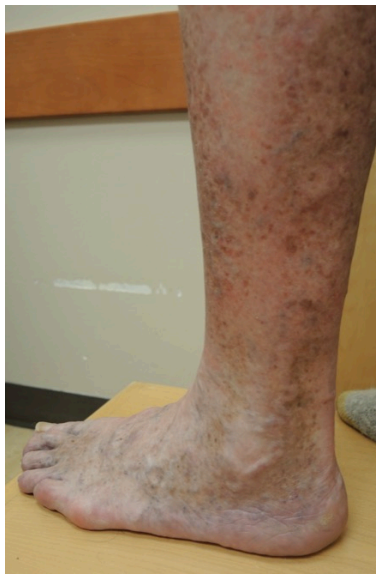
PRE PROCEDURE





3 MONTHS POST PROCEDURE





Images courtesy Kathleen Gibson, MD

CONCLUSION AND KEY LEARNING POINTS

- Patients may present with deep venous obstruction and reflux of deep and superficial veins
- Deciding “which to treat first” depends on severity of lesions, patient presentation
- Both pathologies may need to be addressed, although both may be treated simultaneously, I tend to stage them
- Anticoagulation is important with prothrombotic patients, and does not need to be stopped for superficial vein treatment
- In patients with infrainguinal venous deep venous obstruction and reflux, compression stockings may continue to have a role

ABRE™ VENOUS SELF-EXPANDING STENT SYSTEM BRIEF STATEMENT

Intended Use/Indications: The Abre™ venous self-expanding stent system (Abre™ stent system) is indicated for use in the iliofemoral veins for the treatment of symptomatic venous outflow obstruction.

Contraindications: Do not use the Abre™ stent system with patients with known hypersensitivity to nickel titanium (nitinol), with patients who are judged to have a lesion that prevents complete inflation of a balloon dilatation catheter or proper placement of the stent or the stent delivery system, and with patients in whom anticoagulant or antiplatelet therapy is contraindicated.

Potential Adverse Effects of the Device on Health: The potential adverse effects (e.g., complications) associated with the use of the Abre™ stent system include, but are not limited to, access failure, access site infection, allergic reaction to contrast medium or procedure medications; aneurysm; AV fistula; bleeding; bruising; death; device breakage; device maldeployment; edema; embolization; fever; hematoma; hypertension; hypotension, nausea, or other vasovagal response; infection; myocardial infarction, arrhythmia, or other cardiovascular insufficiency; open surgical repair; pain; pseudoaneurysm; renal insufficiency or renal failure (new or worsening); respiratory distress or pulmonary embolism; sepsis; stent fracture; stent malapposition; stent malposition; stent migration; stroke, paradoxical embolism, transient ischemic attack, or intracerebral hemorrhage; tissue necrosis; venous occlusion, restenosis, or thrombosis, within or outside of stented segment; and vessel damage, including intimal injury, dissection, perforation, or rupture.

Warnings, precautions, and instructions for use can be found in the product labeling at http://manuals.medtronic.com.

CAUTION: Federal (USA) law restricts this device to sale by or on the order of a physician.

VENASEAL™ CLOSURE SYSTEM BRIEF STATEMENT & CLOSUREFAST™ REFERENCE STATEMENT

Intended Use/Indications: The VenaSeal™ closure system (VenaSeal™ system) is indicated for use in the permanent closure of lower extremity superficial truncal veins, such as the great saphenous vein (GSV), through endovascular embolization with coaptation. The VenaSeal system is intended for use in adults with clinically symptomatic venous reflux as diagnosed by duplex ultrasound (DUS).

Contraindications: Separate use of the individual components of the VenaSeal closure system is contraindicated. These components must be used as a system. The use of the VenaSeal system is contraindicated when any of the following conditions exist: previous hypersensitivity reactions to the VenaSeal™ adhesive or cyanoacrylates, acute superficial thrombophlebitis, thrombophlebitis migrans, acute sepsis.

Potential Adverse Effects of the Device on Health: The potential adverse effects (e.g., complications) associated with the use of the VenaSeal system include, but are not limited to, adverse reactions to a foreign body (including, but not limited to, nonspecific mild inflammation of the cutaneous and subcutaneous tissue), arteriovenous fistula, bleeding from the access site, deep vein thrombosis (DVT), edema in the treated leg, embolization, including pulmonary embolism (PE), hematoma, hyperpigmentation, hypersensitivity or allergic reactions to cyanoacrylates, such as urticaria, shortness of breath, and anaphylactic shock, infection at the access site, pain, paresthesia, phlebitis, superficial thrombophlebitis, urticaria, erythema, or ulceration may occur at the injection site, vascular rupture and perforation, visible scarring.

Warnings, precautions, and instructions for use can be found in the product labeling at http://manuals.medtronic.com.

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ClosureFast™ RFA system Reference Statement
IMPORTANT: Please reference the Instructions For Use (IFU) for a complete listing of indications, contraindications, warnings and precautions, adverse effects and suggested procedure.

CAUTION: Federal (USA) law restricts this device to sale by or on the order of a physician.

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