Penn Medicine

Evaluating the venous patient:
Is it deep or superficial venous disease & what should I do next?

Deepak Sudheendra, MD, MHCI, RPVI, FSIR
Director of DVT & Complex Venous Disease Program
Assistant Professor of Clinical Radiology & Surgery

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Why should a physician/institution care about venous dis?

- Prevalence of venous disease is 5x greater than arterial disease & most patients go untreated
- $15B per year spent on venous ulcers
- Tremendous opportunity for multi-disciplinary collaboration and research
- Patients are EXTREMELY happy and grateful – you will become their favorite doctor!
- **Patient satisfaction scores!!!**

Dr. Sudi's 5 Rules of Venous Disease

- Rule 1: Veins are NOT arteries.
- Rule 2: First learn Rule 1
- Rule 3: DVT and chronic venous insufficiency (CVI) go together like peas and carrots
- Rule 4: You have ONE chance to treat the DVT patient correctly the first time
- Rule 5: If you (or your group) cannot treat both DVT & CVI, you are not practicing comprehensive vascular care.

The Spectrum of Chronic Venous Disease





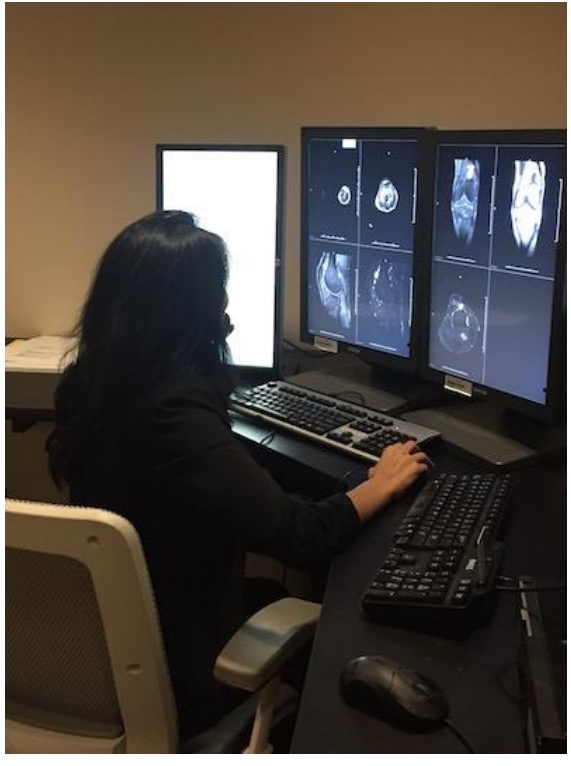








To prevent CVI, what 2 things should you NEVER do?

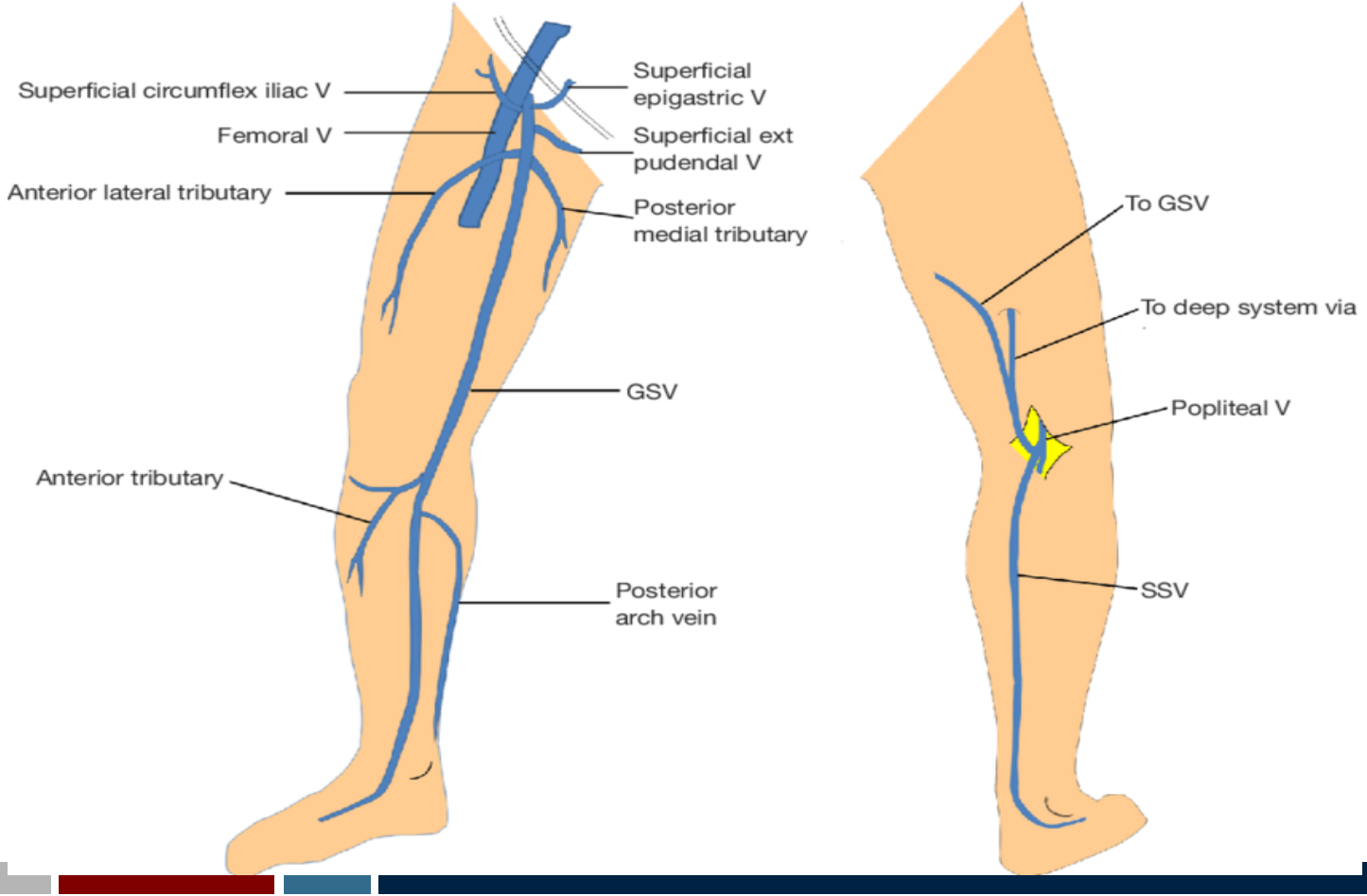




Symptoms of Chronic Venous Insufficiency

- Aching, fatigue, heaviness in legs
- Pain: throbbing, burning, stabbing
- Groin/hip/knee pain
- Cramping
- Swelling (worse at the end of the day)
- Itching
- Restless legs, numbness, tingling

Superficial venous anatomy



Acute DVT Symptoms

- Sudden swelling in affected limb
- Limb pain/tenderness
- Pain on dorsiflexion of the foot
- Dilated superficial collateral veins
- Cyanosis or pallor
- Warm skin over area of thrombosis
- Weak/lack of pulses (phlegmasia)
- Often difficult to differentiate from non-thrombotic disorders





Schreiber, D. Deep venous thrombosis and thrombophlebitis. www.emedicine.com/emerg/topic122.htm, last updated October 2005

Venous Thrombosis Complications: Post-Thrombotic Syndrome (PTS)

- Up to 47% of DVT patients develop PTS
- Symptoms / Consequences
  - Swelling
  - Pain
  - Dermatitis
  - Varicose veins
  - Ulceration fibrosis with atrophy
  - Lymphedema
  - Venous claudication



PTS symptoms that you may NOT think of

- Pain w/o swelling
- Itching
- Pelvic/abdominal varicosities
- Labial varicosities
- Pain during intercourse
- Knee/Hip pain
- Heaviness/Fatigue
- Pelvic congestion syndrome

DVT & CVI symptoms that are overlooked

Symptoms of CVI	Specialty Referred To or Treatment	Comments
Heaviness/fatigue	Live with it; stockings	
Restless legs	Neurology; Requip (dopamine agonist)	Restless leg syndrome different than restless leg symptoms. Easy to distinguish by doing reflux US. If US & PE neg, refer to neurology
Night cramps/Charley horses	K/Mg supplements; Gatorade; quinine	Early sign of CVI but needs to start w/stockings & see vein specialist
Spider veins	It's cosmetic; nothing to do	True but spider veins are early sign of venous disease & can be treated if pt wants to pay cash
Varicose veins	Live with it; it's cosmetic	Ropey varicose veins can lead to phlebitis & potentially DVT
Ankle/calf swelling	US to r/o DVT; diuretics; referral to cardiology for CHF; lymphedema referral	Below the knee leg/ankle swelling is classic CVI, esp if swelling worsens as the day goes on & improves w/elevation.
Pins/needles/neuropathy in feet	Neurology	
Itching on the shins	Allergy/Dermatology; antihistamines	
Skin Discoloration or recurrent cellulitis	Dermatology for steroids & sometimes skin biopsy	Steroids delay care. Skin biopsy can lead to venous ulcer.
Venous ulcers	Wound care center	Missed opportunity to refer to venous specialist. Ulcer will not heal until underlying problem treated.
Knee/Hip pain	Orthopedics; steroid injections	GSV & SSV start in the groin and knee, respectively. If there is significant CVI, this can cause pain in hip/knee.
Superficial thrombophlebitis	NSAIDs & warm compresses; antibiotics	Superficial thrombophlebitis is NOT entirely benign. It does carry risk of DVT & anticoag may be needed if thrombus in superficial vein is: ➢ 5 cm in length ➢ Extends above the knee ➢ Is within 10 cm of the saphenofemoral junction

Clinical Evaluation of the DVT Patient



Lipedema vs Lymphedema vs Phlebolymphedema





Phlebolymphedema

Nonhealing ulcers

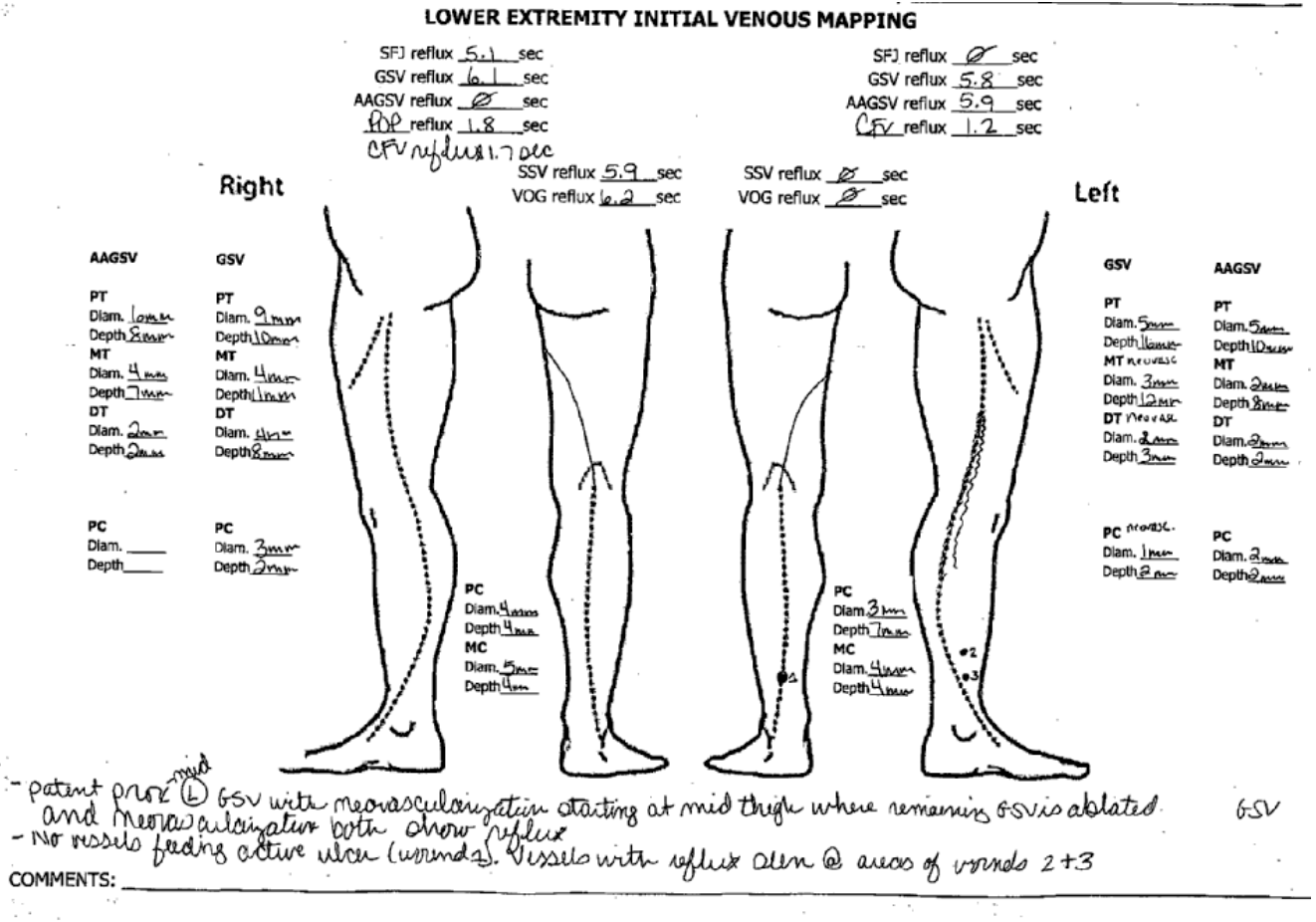




What do I discuss in consultation?

- Superficial & deep venous anatomy
- Concept of reflux and deep vein obstruction including iliac vein compression syndrome
- ROS & signs/symptoms of chronic venous insufficiency
  - How do their legs feel now compared to when they were 25 yo?
- Exercise, wt loss, and compression stockings
- Prior treatments and/or advice given
- Wound care
- Treatment plan
- Photographs

Vein Mapping



LOWER EXTREMITY INITIAL VENOUS MAPPING

Right

SFJ reflux 5.1 sec
GSV reflux 6.1 sec
AAGSV reflux Ø sec
PopF reflux 1.8 sec
CFV reflux 1.7 sec
SSV reflux 5.9 sec
VOG reflux 6.2 sec

AAGSV
PT Diam. lower Depth 8mm
MT Diam. 4 mm Depth 7mm
DT Diam. 2mm Depth 2mm
PC Diam. ____ Depth ____

GSV
PT Diam. 9mm Depth 10mm
MT Diam. 4mm Depth 11mm
DT Diam. 4mm Depth 8mm
PC Diam. 3mm Depth 3mm

PC Diam. 4mm Depth 4mm
MC Diam. 5mm Depth 4mm

Left

SFJ reflux Ø sec
GSV reflux 5.8 sec
AAGSV reflux 5.9 sec
CFV reflux 1.2 sec
SSV reflux Ø sec
VOG reflux Ø sec

GSV
PT Diam. 5mm Depth 11mm
MT Diam. 3mm Depth 12mm
DT Diam. 2mm Depth 3mm
PC Diam. 1mm Depth 2mm

AAGSV
PT Diam. 5mm Depth 10mm
MT Diam. 2mm Depth 8mm
DT Diam. 2mm Depth 2mm
PC Diam. 2mm Depth 2mm

PC Diam. 3mm Depth 7mm
MC Diam. 4mm Depth 4mm

- patent prox mid (L) GSV with neovascularization starting at mid thigh where remaining GSV is ablated
- and neovascularization both show reflux
- No vessels feeding active ulcer (wounds). Vessels with reflux seen @ areas of wounds 2+3

GSV

COMMENTS:

After EVLT & UGS

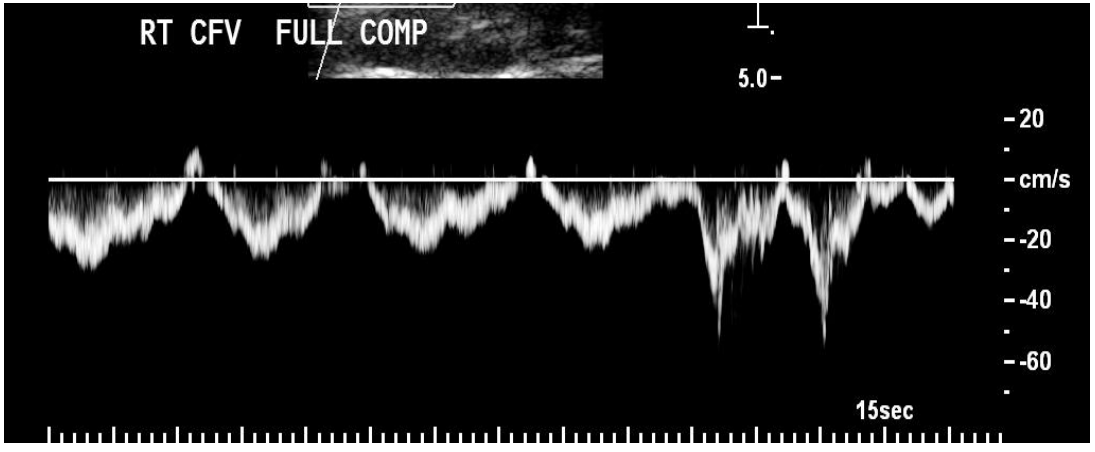


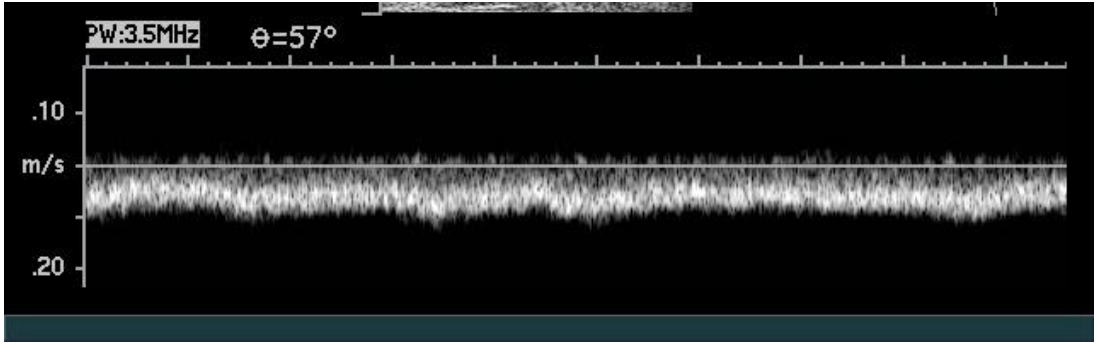
Pretreatment



6 weeks post UGS & EVLT
SSV & vein of Giacomini

Duplex of CFV

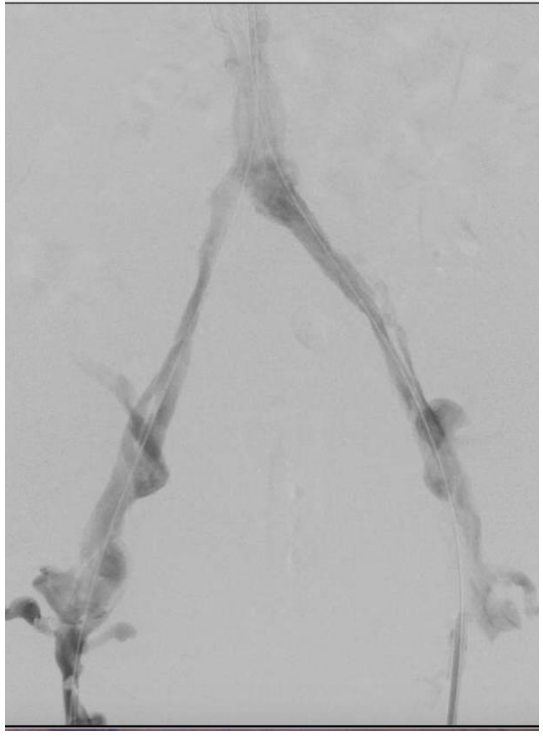




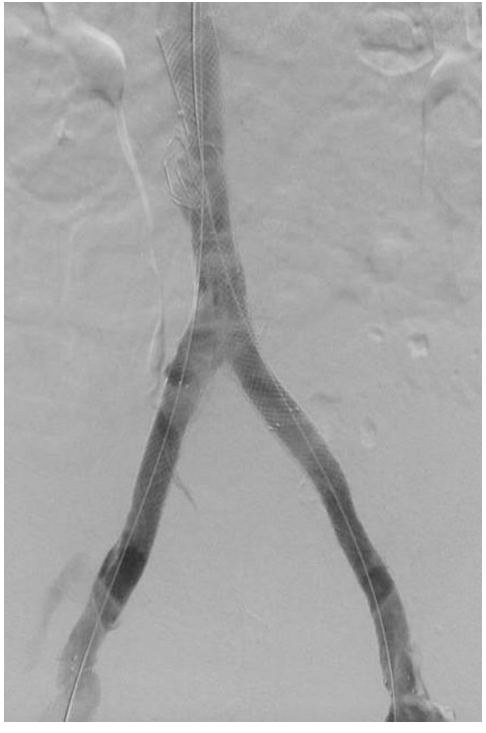
Common femoral vein waveforms studied for evidence of iliac obstruction

- Lack of respiratory variation
- No change in velocity with augmentation maneuvers

Venogram with IVUS + 16mm Wallstents



Initial venogram



Post stenting

Anticoagulation Regimen

- Lovenox 1 mg/kg BID 48 hrs before procedure, day of procedure, and 1 month post procedure
- Check Factor Xa level
- If stenting, add Plavix for 1 month
- At 1 month f/u, if stents patent, add DOAC

Post superficial & deep venous treatment



Pretreatment



6 wks post stenting



3 years

Multi-disciplinary approach to venous disease



Dr. Sudi



Dr. Adam Cuker



Dr. Elaine Chiang



Dr. Charles Abrams



Dr. Harry Jha
Dr_Sudi



Dr. Jeffrey Moon



RVT



Dr. Ryan Cobb