Ramathibodi Surgical Conference

Management of chronic venous disease

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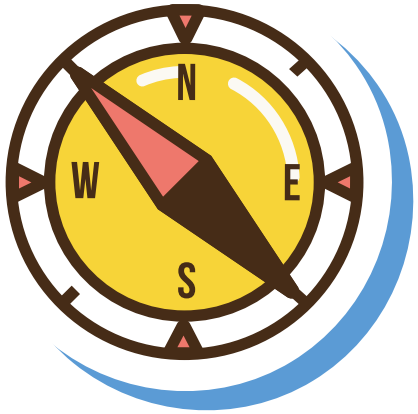
Disclosure

- Speaker name: **Nutsiri Kittitirapong**
- I have the following potential conflicts of interest to report:
- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)
- ✓ I do not have any potential conflict of interest

Outline

What is CVD?



Approach

New CEAP

Treatment modality

1. What is CVD?

Background

- Chronic venous insufficiency is a complex condition, with widely varied clinical manifestations, etiologies, and underlying pathophysiology.
- An orderly workup is mandatory to assess the nature of a patient's underlying venous disease: careful medical history, physical examination, and bedside diagnostic tests.

Krishnan S. SEMINARS IN INTERVENTIONAL RADIOLOGY/VOLUME 22, NUMBER 3 2005

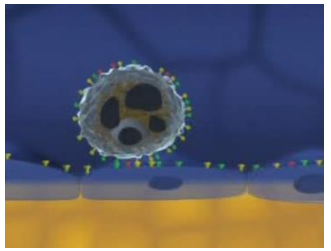
Pathophysiology

Central pump (the heart)
Pressure gradients,
Peripheral venous pump
Competent valves in patent veins.

Long standing repeated over time, Genetic predisposition, obesity, pregnancy

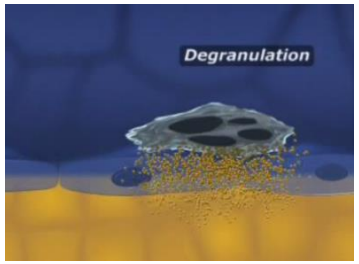
Venous hypertension

Altered blood flow and shear stress



Leukocyte activation and expression of adhesion molecules

Adhesion and infiltration of leukocytes in the vein wall and valve



Degranulation of the leukocyte and release of inflammatory mediators

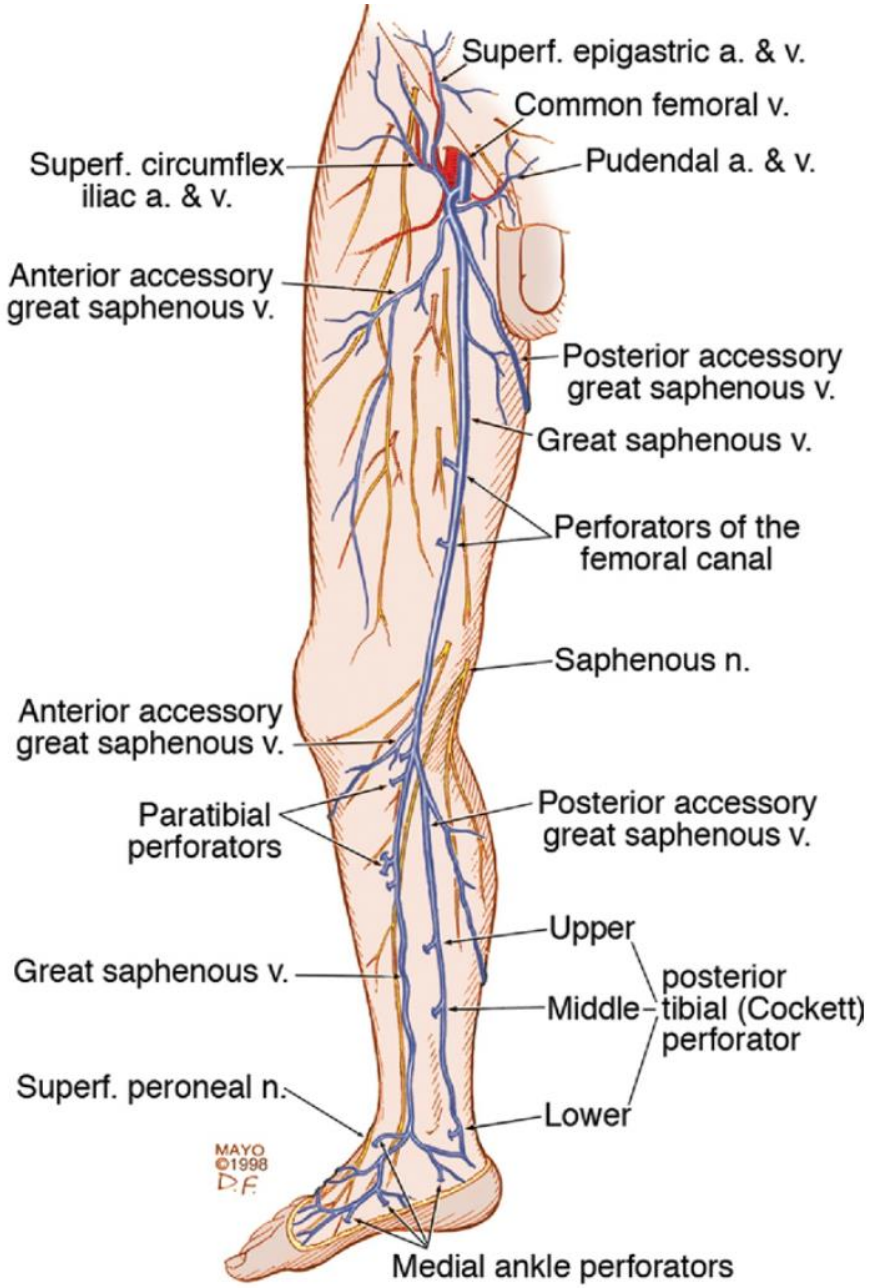
Degradation of the vein wall and valve

Increased hypertension leading to chronic hypertension

Adapted from: Danziger N. *J Mal Vasc.* 2007;32:1-7
Bergan JJ et al. *N Engl J Med.* 2006;355:488-498.

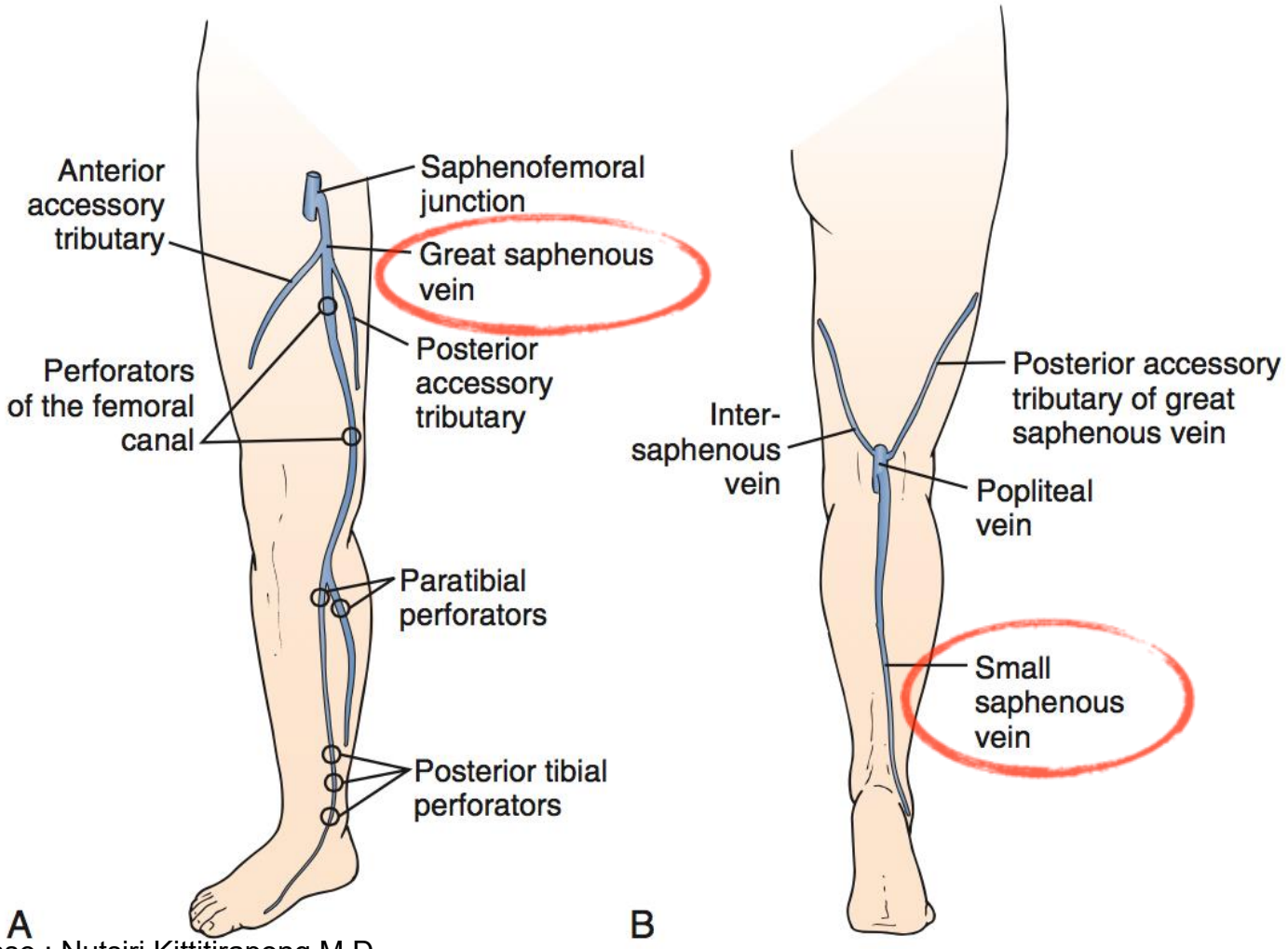
Anatomy

- Superficial venous system
  - GSV
  - SSV
- Deep venous system
- Perforation system
- Venous valve

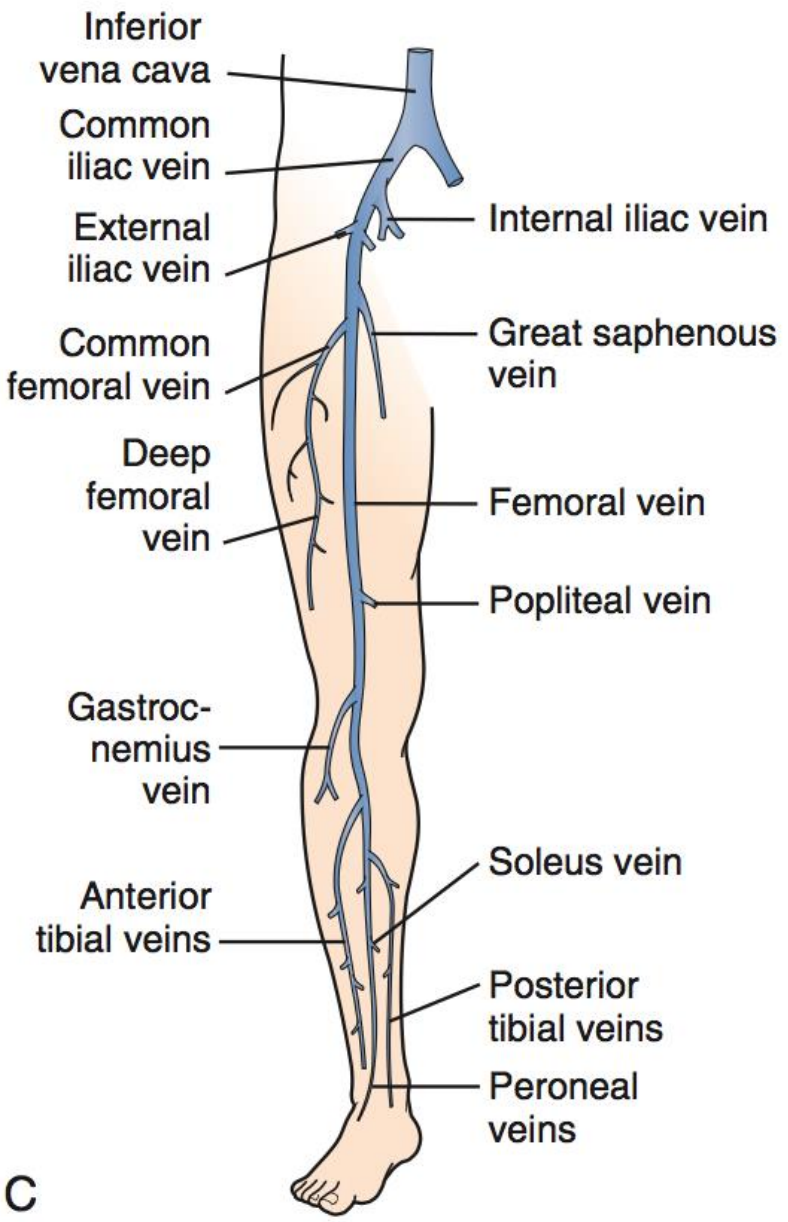


LORI L. POUNDS.RUTHERFORD'S VASCULAR SURGERY,8 ed.Chapter 11. p150-162

Superficial venous system



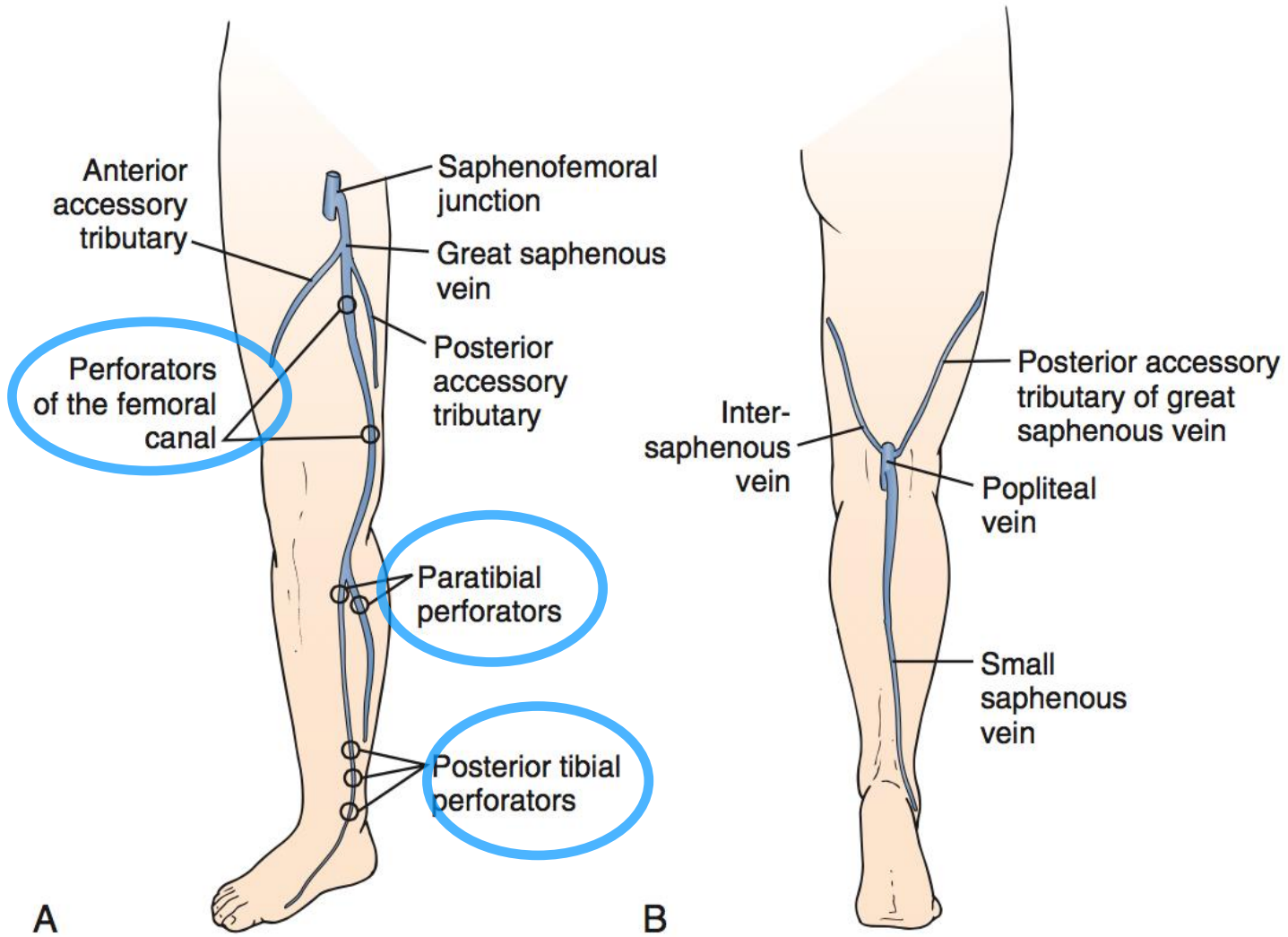
Deep venous system



LORI L. POUNDS,RUTHERFORD'S VASCULAR SURGERY8 ed.Chapter 11. p150-162

Management of chronic venous disease : Nutsiri Kittitirapong M.D.

Perforator vein



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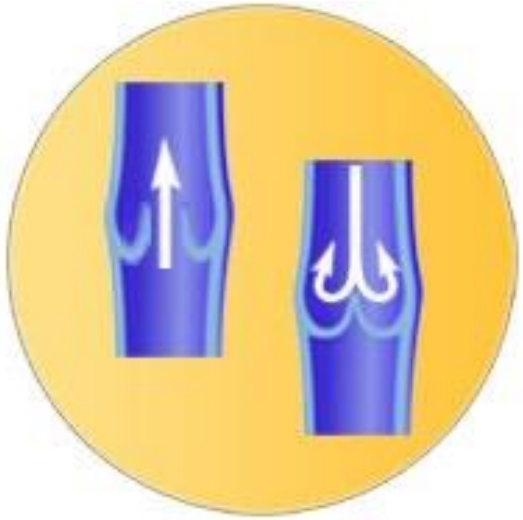
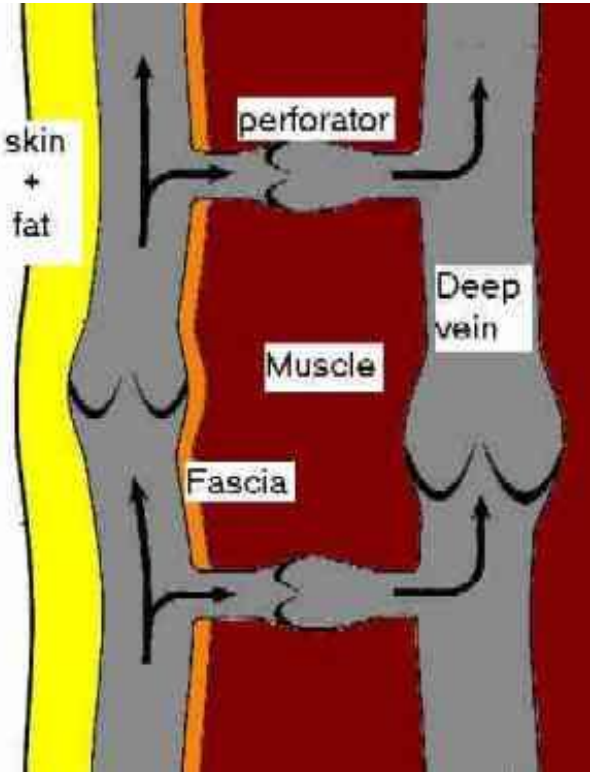
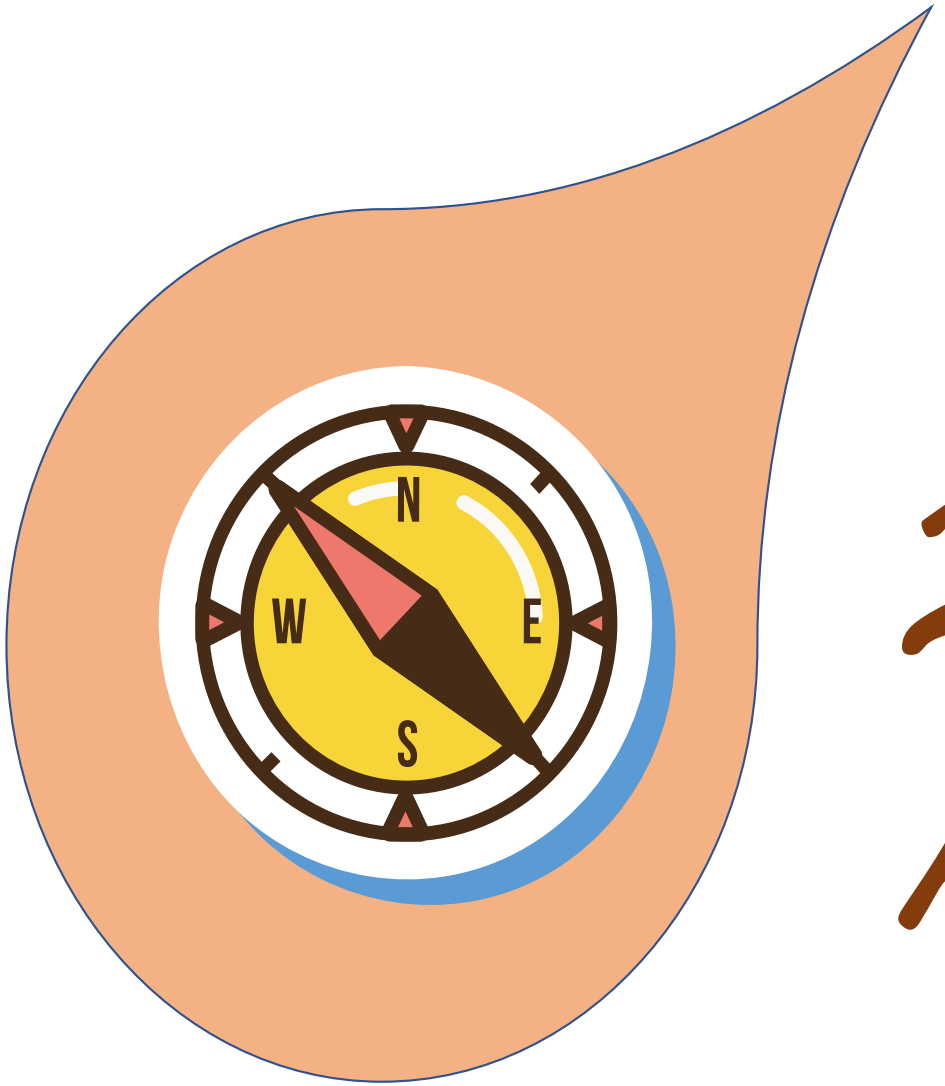
Bicuspid valves

- Prevent reflux
  - From upward to downward
  - From deep to superficial







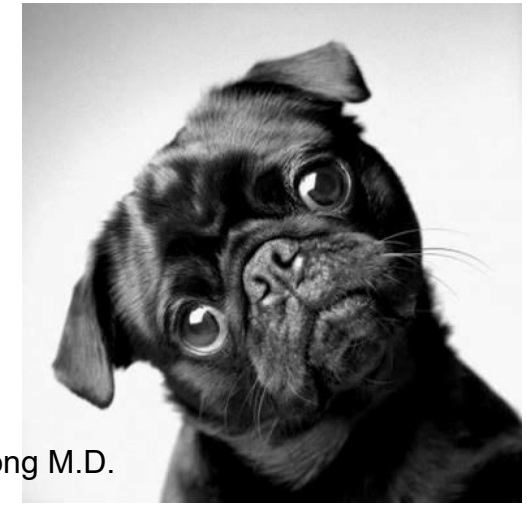
2. Approach

Main signs of chronic venous disorders

No clinical signs	Telangiectasia (spider veins) or reticular veins	Varicose veins	Edema	Skin changes	Healed ulcer	Active ulcer
C_{0S}	C_1	C_2	C_3	C_4	C_5	C_6
						
Symptoms like pain, heaviness, swelling	Dilated vein (<3 mm) red or purple	Dilated veins (>3 mm) that are tangible and under the skin	Swelling of the calf and the ankle due to an accumulation of water	Pigmentation and/or eczema	Cutaneous modifications with a closed ulceration	Cutaneous modifications with open ulceration

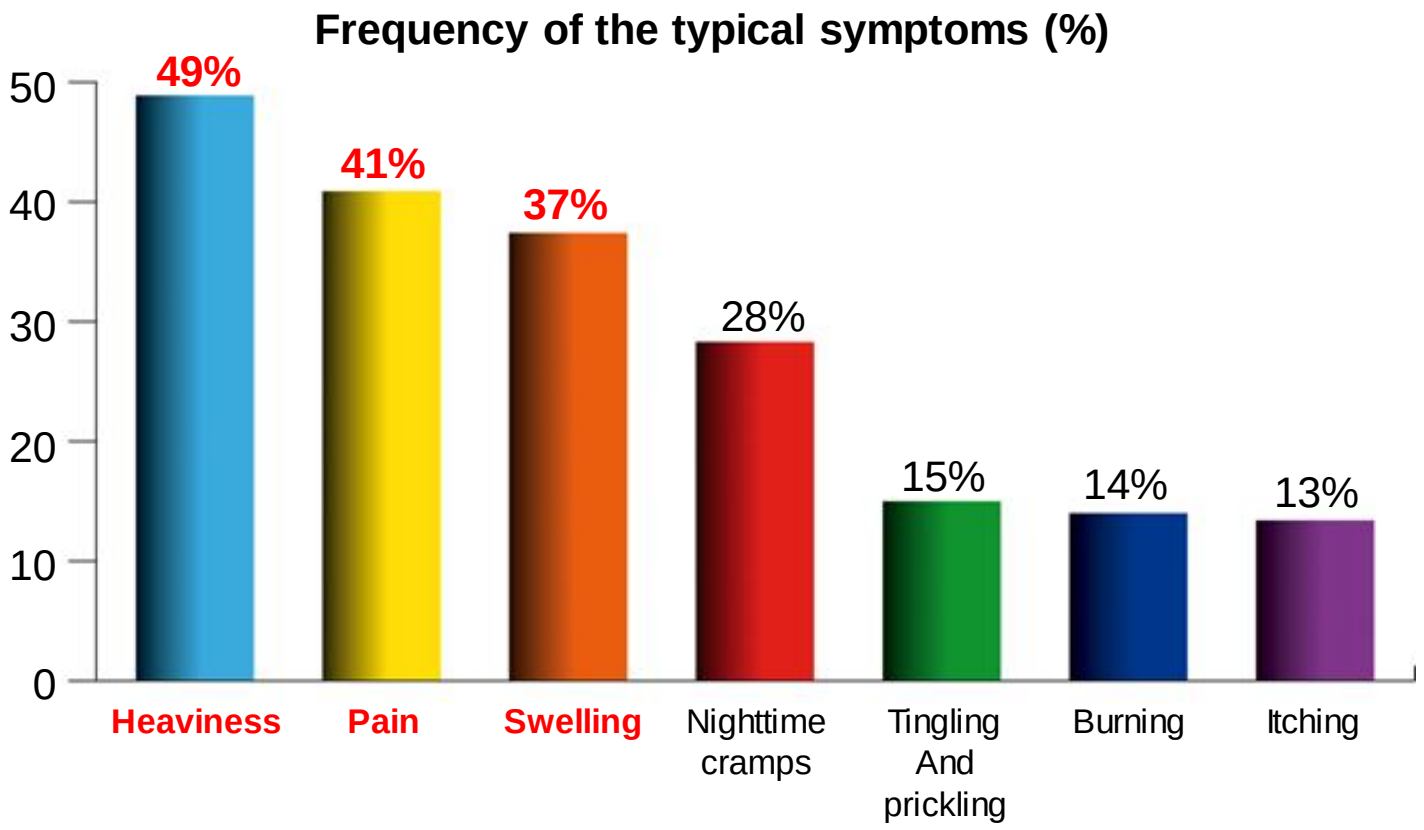
History taking and Physical examination

Chief complaint is important!!!



Patient's expectation

Symptoms of chronic venous disease



Guex J J, Allaert F.A. Phlebology. 2012;65-2 p.57-56

Differential Diagnosis of Claudication

Condition	Location of Pain or Discomfort	Characteristic Discomfort	Onset Relative to Exercise	Effect of Rest	Effect of Body Position	Other Characteristics
Arterial Conditions						
Intermittent claudication of the calf	Calf muscles	Cramping pain	After same degree of exercise	Quickly relieved	None	Reproducible
Intermittent claudication of the hip, thigh, buttock	Hip, thigh, buttocks	Aching discomfort, weakness	After same degree of exercise	Quickly relieved	None	Reproducible
Popliteal artery entrapment	Calf muscles	Cramping pain	After exercise	Quickly relieved	Aggravated by extension of the foot	Typically seen in younger patients
Venous Conditions						
Venous claudication	Entire leg, but usually worse in the thigh and groin	Tight, bursting pain	After walking	Subsides slowly	Relief speeded by elevation	History of iliofemoral deep venous thrombosis, signs of venous congestion, edema
Venous compartment syndrome	Calf muscles	Tight, bursting pain	After much exercise (e.g., jogging)	Subsides very slowly	Relief speeded by elevation	Typically, heavily muscled athletes
Neurologic Conditions						
Nerve root compression (e.g., herniated disk)	Radiates down leg, usually posteriorly	Sharp lancinating pain	Soon, if not immediately after onset	Not quickly relieved (also often present at rest)	Relief may be aided by adjustment of back position	History of back problems
Neurospinal root compression	Hip, thigh, buttocks (follows dermatome)	Weakness more than pain	After walking or standing for same time	Relieved by stopping only if position changed	Relieved by lumbar spine flexion (sitting or stooping forward)	Common history of back problems; provoked by increased intra-abdominal pressure
Orthopedic Conditions						
Hip arthritis	Hip, thigh, buttocks	Aching discomfort	After variable degree of exercise	Not quickly relieved (and may be present at rest)	Patient is more comfortable sitting with weight taken off legs	Variable; may relate to activity level, weather changes

Rutherford 9th, Chapter 18, Clinical Evaluation of the Arterial System

Signs & Symptoms of chronic venous disease

Symptomatic

Telangiectasia (spider veins) or reticular veins

Signs & Symptoms of chronic venous disease

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มีอาการ

Varicose vein

Superficial vein thrombophlebitis is not benign !!!

Superficial vein thrombosis (SVT)

- POST study
  - 844 patients c SVT→25% DVT/ 3.9% PE

→ All patient c SVT should have bilateral DUS scan R/o DVT

Decousus H. Ann Intern Med. 2010; 152:218-224

8.1 Treatment of Patients With Superficial Vein Thrombosis

8.1.1. In patients with superficial vein thrombosis of the lower limb of at least 5 cm in length, we suggest the use of a prophylactic dose of fondaparinux or LMWH for 45 days over no anticoagulation (Grade 2B).

Remarks: Patients who place a high value on avoiding the inconvenience or cost of anticoagulation and a low value on avoiding infrequent symptomatic VTE are likely to decline anticoagulation.

8.1.2. In patients with superficial vein thrombosis who are treated with anticoagulation, we suggest fondaparinux 2.5 mg daily over a prophylactic dose of LMWH (Grade 2C).

CALISTO study: Fundaparinux 2.5 mg OD vs Placebo

Ddeath from PE+: 0.9% VS 5.9% RR 85%; 95% CI 74 to 92; P<0.001).

Decousus H. N Engl J Med 2010; 363:1222-1232

SUERPRISE trial: Rivaroxaban 10 mg OD VS fondaparinux 2.5 mg OD

the primary efficacy outcome : 3% VS 2% (HR) 1·9, 95% CI 0·6–6·4; p=0·0025 for non-inferiority) at day 45.

Beyer-Westendoff. LANCET Hemotomogy.2017

Guyatt HG. ACCP 2012. CHEST 2012; 141(2)(Suppl):7S–47S

Signs & Symptoms of chronic venous disease

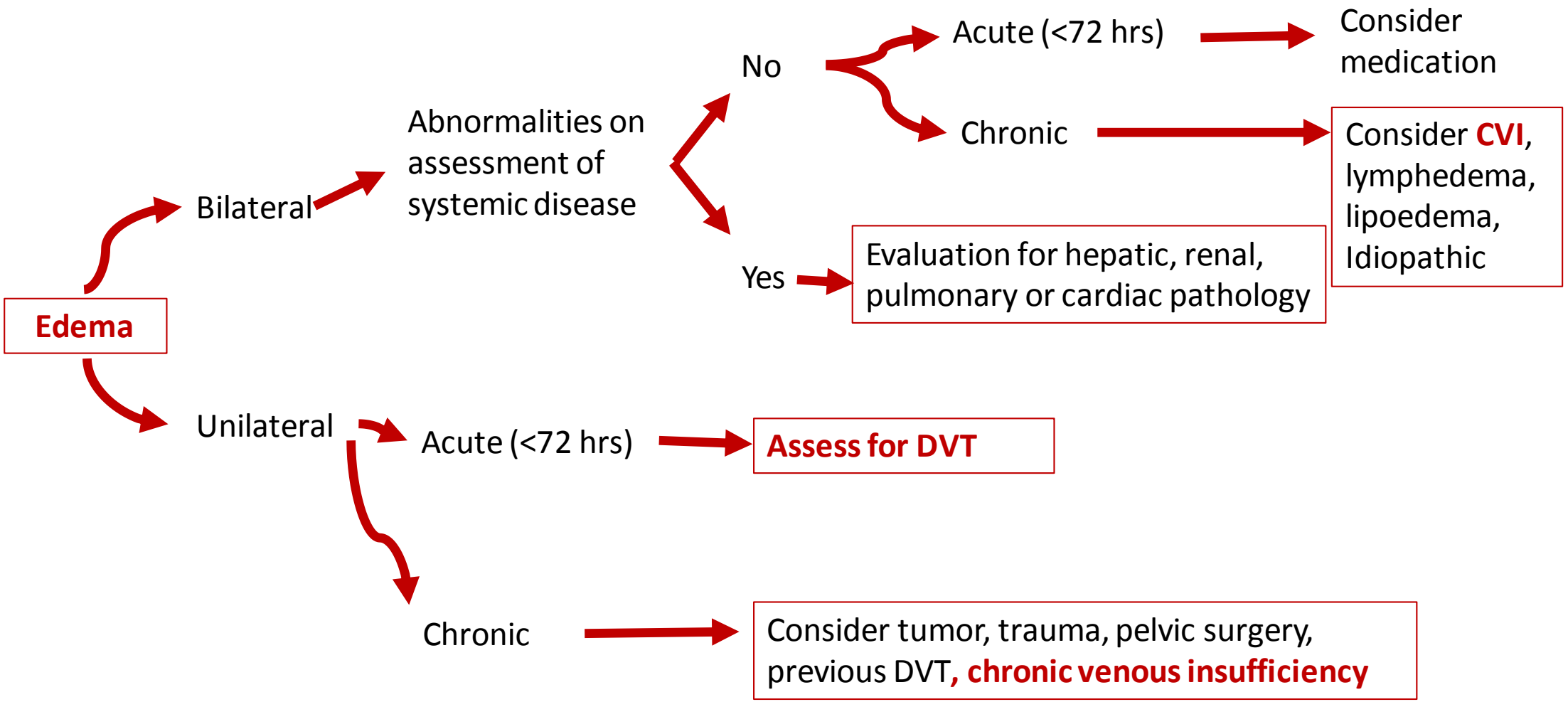
Edema

Differential from DVT

EDEMA : CVI VS DVT

CVI	DVT
Chronic	Acute or sub-acute
Peri-ankle or lower calf	Whole leg
Intermittent	Sustain
Eczema, hyperpigmentation	No skin lesion
Varicose veins	No varicose veins

Signs & Symptoms of chronic venous disease



Trayes KP, Physician. 2013

Signs & Symptoms of chronic venous disease

Skin change

Hyperpigmentation

Stasis eczema

Signs & Symptoms of chronic venous disease

Lipodermatosclerosis

Skin change

Atrophie blanche

Signs & Symptoms of chronic venous disease

Skin change

Corona phlebectatica

A fan-shaped pattern of numerous small intradermal veins on the medial or lateral aspects of the ankle and foot.

Signs & Symptoms of chronic venous disease

Venous ulcer

Gaiter area : distal calf , foot
Serum oozing
Granulated base
Lipodermatosclerosis,
Hyperpigmentation
Pain (แสบ)

Differential Diagnosis of Chronic unhealed ulcer

	CHARACTERISTIC					
Type	Usual Location	Pain	Bleeding With Manipulation	Lesion Characteristics	Surrounding Inflammation	Associated Findings
Ischemic ulcer	Distal, on the dorsum of the foot or toes	Severe, particularly at night; relieved by dependency	Little or none	Irregular edge; poor granulation tissue	Absent	Trophic changes of chronic ischemia; absence of pulses
Neurotrophic ulcer	Under calluses or pressure points (e.g., plantar aspect of the first or fifth metatarsophalangeal joint)	None	May be brisk	Punched out, with a deep sinus	Present	Demonstrable neuropathy
Venous stasis ulcer	Lower third of the leg (gaiter area)	Mild; relieved by elevation	Venous ooze	Shallow, irregular shape; granulating base; rounded edges	Present	Lipodermatofibrosis, pigmentation

Revascularization

Offloading

Compression, venous intervention

Rutherford 9th, Chapter 18, Clinical Evaluation of the Arterial System

Risk factors

AGE

HERIDITY: 47% and 89% risk of CVD if one or both parents have varicose veins

GENDER

PREGNANCY

HEIGHT: taller people are more susceptible to varicose veins

OVERWEIGHT

AIR TRAVEL

TIGHT CLOTHING

SEDENTARY LIFESTYLE

UNBALANCED DIET

HEAT

HORMONE IMBALANCES such as puberty and hormone treatments

Other causes

Other causes

- Congenital
- Secondary
  - Intravenous : DVT, traumatic AVF, primary intravenous sarcoma
  - Extravenous:
    - Condition affecting venous hemodynamics : Obesity, CHF, nutcracker syndrome, pelvic congestion syndrome
    - External compression: tumor or retroperitoneal fibrosis
    - Muscle pumping dysfunction: chronic immobility, frozen ankle, or severe sedentary state

Lurie F. J Vasc Surg: Venous and Lym Dis 2020;8:342-52.

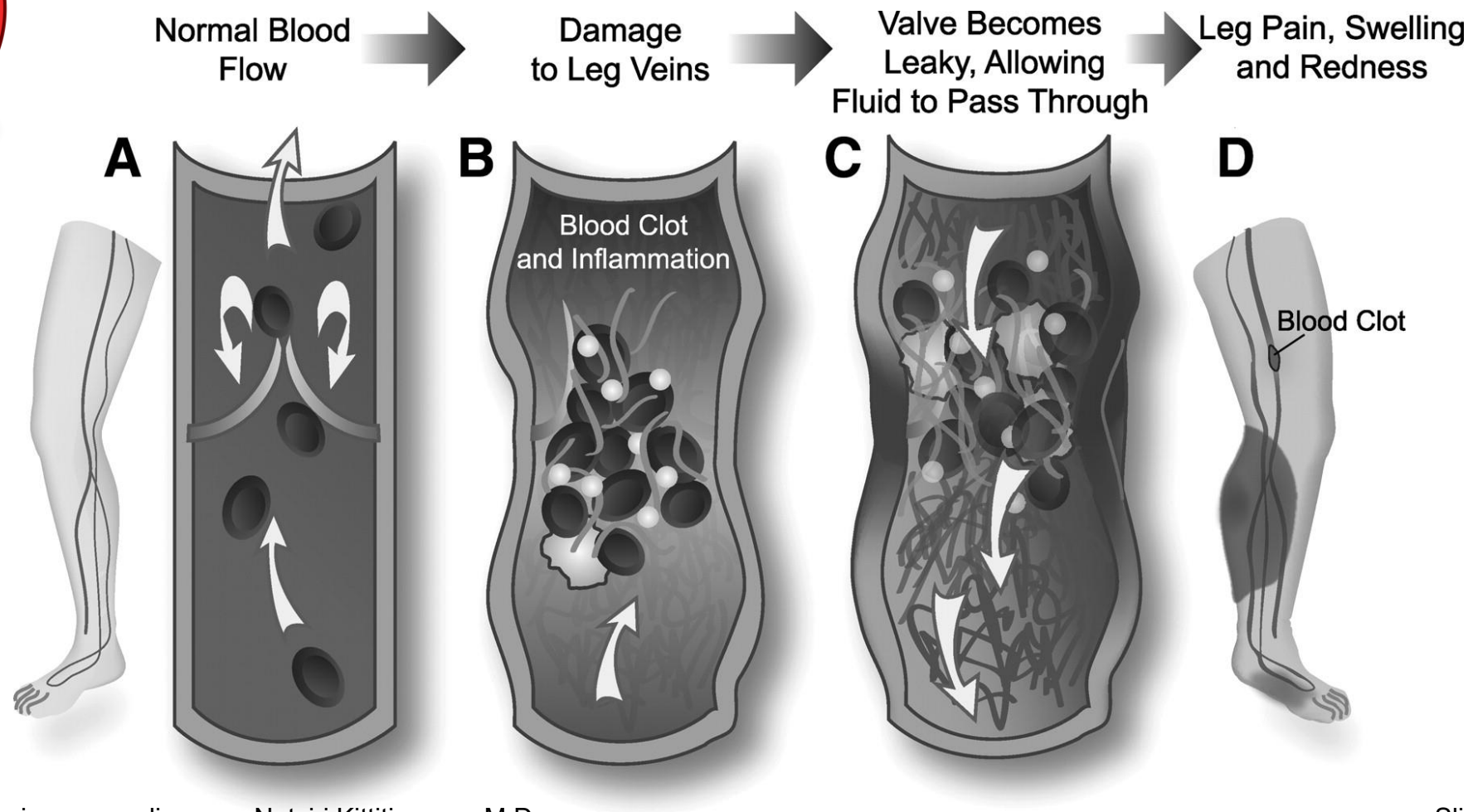
Congenital

Klippel-Trenaunay syndrome (KTS)

- Congenital vascular disorder
- Limb affected by
  - Port wine stains (red-purple birthmarks involving blood vessels)
  - Varicose veins
  - Bone and soft tissue overgrowth

Secondary

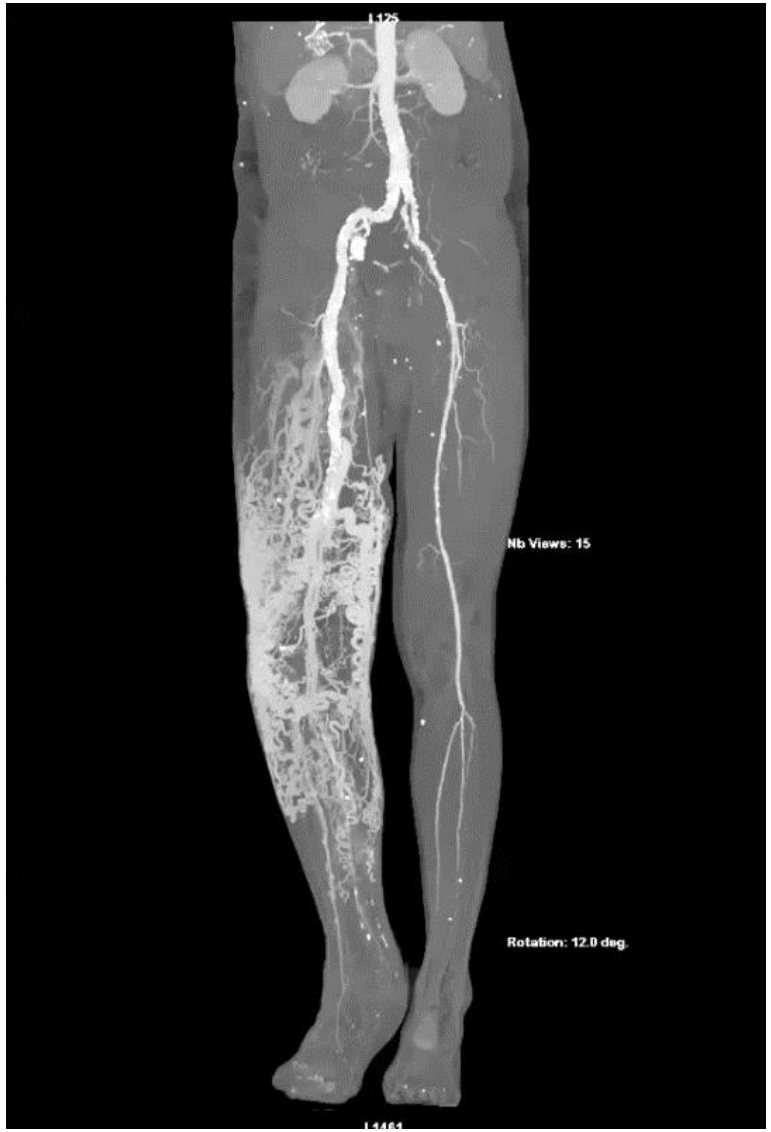
Postthrombotic Syndrome



Sara R. Vazquez. Circulation. Volume 121, Issue 8, 2 March 2010, Pages e217-e219

Secondary

Traumatic AVF



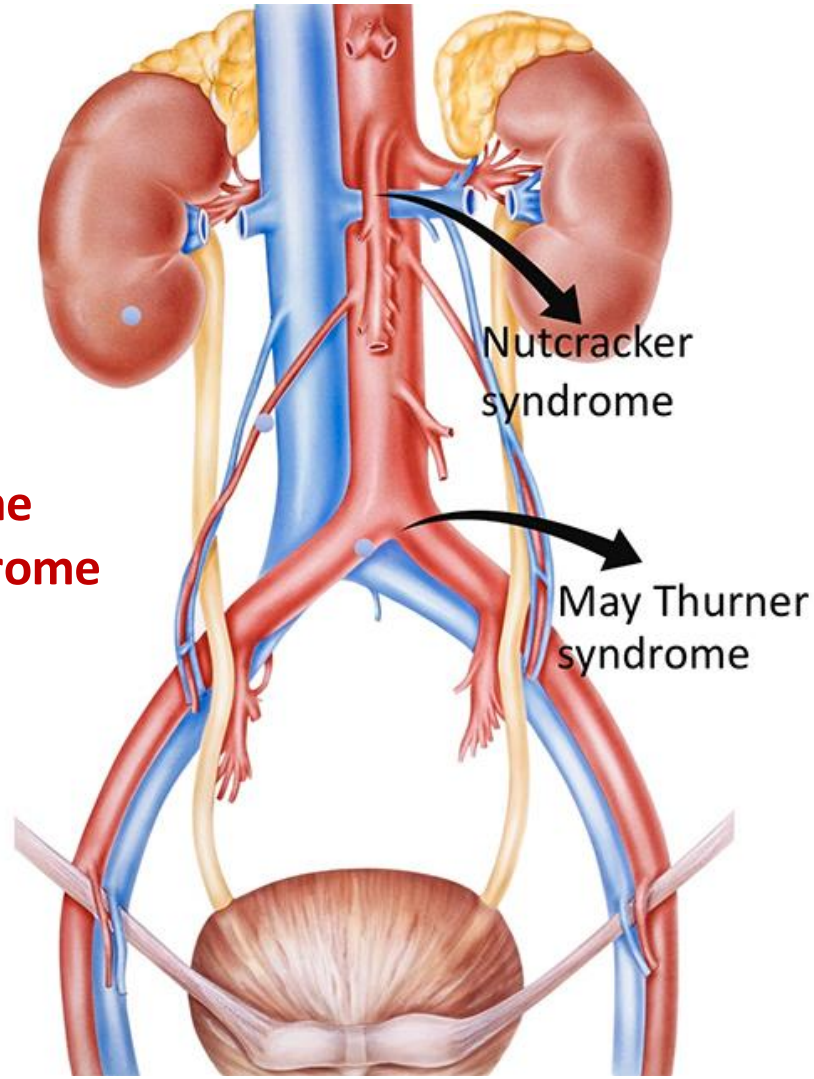
Secondary

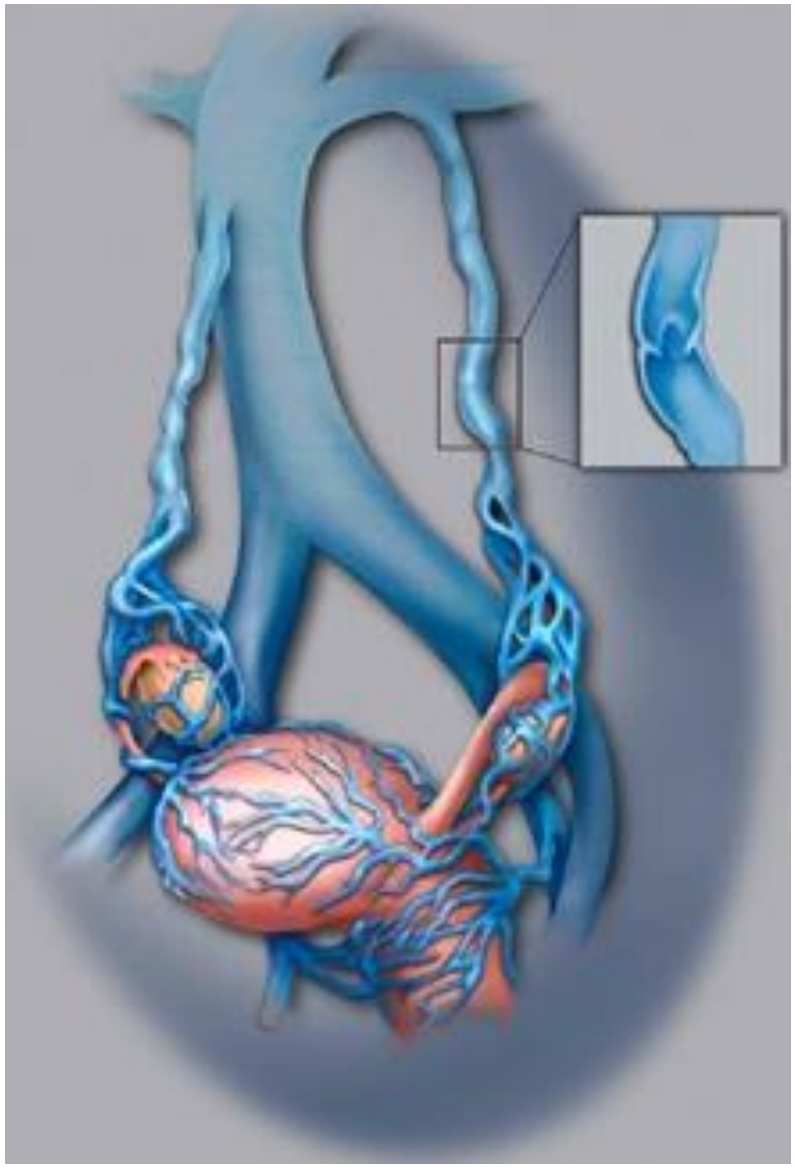
Obesity and Sedentary state

Secondary

Compression :

- **Nutcraker syndrome**
- **May Thurner syndrome**





Pelvic congestion syndrome

Physical examination

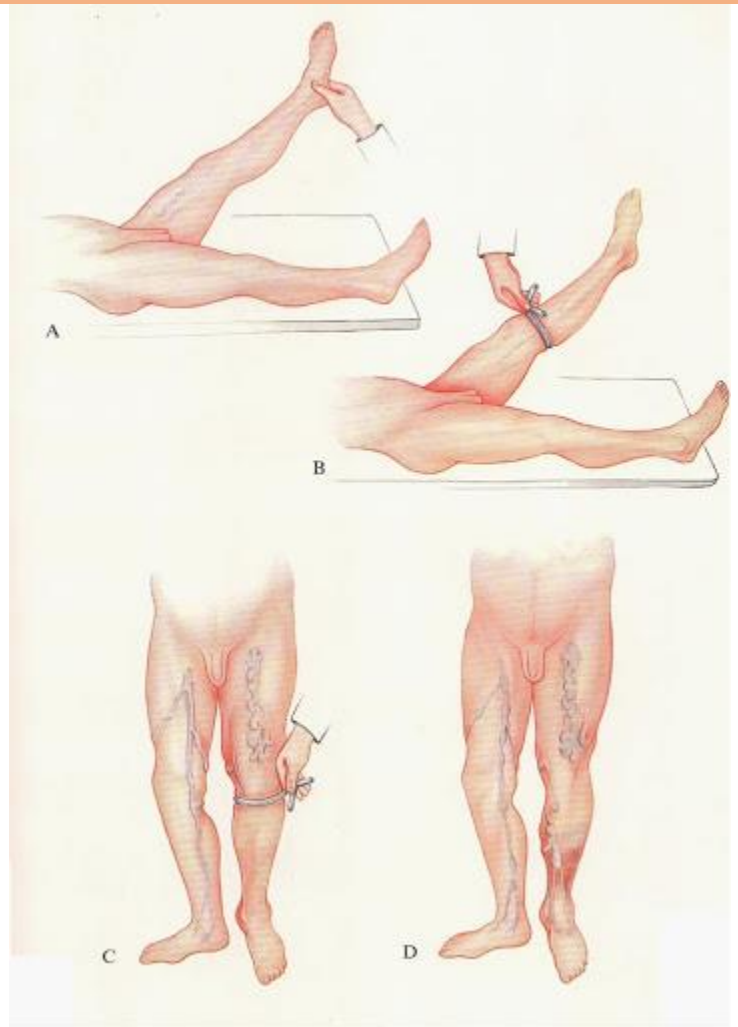
- Standing position
- Suitably undressed (complete exam groin to toe)
- The location and distribution of all major subcutaneous varicosities
- Palpation :
  - Temperature differences between the legs
  - Areas of induration
  - Presence of firm subcutaneous cords (prior episodes of superficial thrombophlebitis)
  - Large varicosities over known sites of perforating veins

Krishnan S. SEMINARS IN INTERVENTIONAL RADIOLOGY/VOLUME 22, NUMBER 3 2005

Physical examination

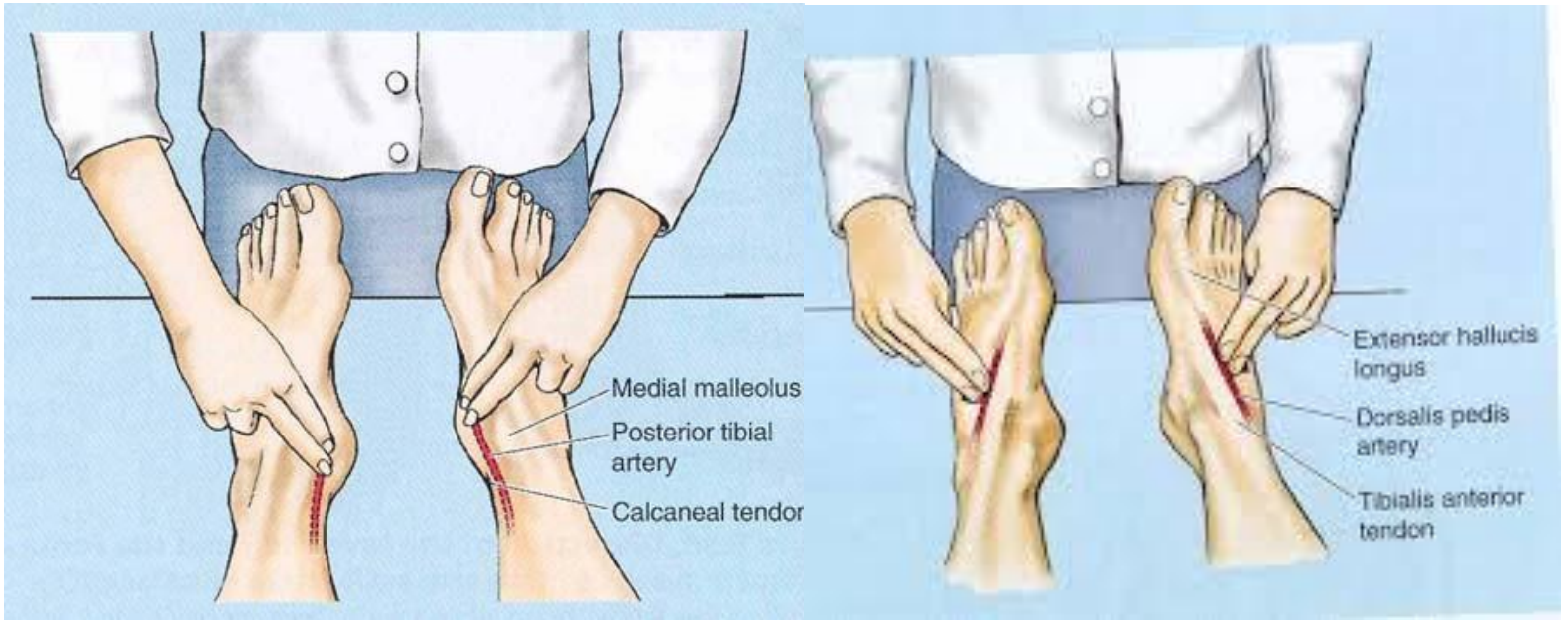
- The cough impulse test
- The tap test or percussion test
- The Brodie-Trendelenburg test
- The Perthes test

High sensitivity but low specificity



Krishnan S. SEMINARS IN INTERVENTIONAL RADIOLOGY/VOLUME 22, NUMBER 3 2005

Assessment



Distal pulses

Eur J Vasc Endovasc Surg (2015) 49, 678–737

Editor's Choice – Management of Chronic Venous Disease

Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

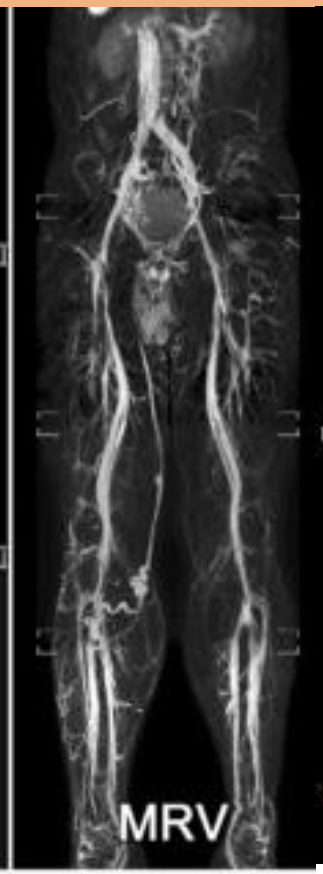
Recommendation 6	Class	Level
History taking from the patient with chronic venous disease is recommended before further investigation, targeting especially specific symptoms, any thromboembolic antecedent and relevant drug intake.	I	C

Recommendation 7	Class	Level
Physical examination of patients should always be performed, looking for varicose veins, oedema, and skin changes.	I	C

Recommendation 8		
The traditional diagnostic tests Trendelenburg, Perthes, and other such tests are not recommended in the work up of patients with chronic venous disease.	III	B

Wittens C. Eur J Vasc Endovasc Surg (2015) 49, 678e737

Investigation



Eur J Vasc Endovasc Surg (2015) 49, 678–737

Editor's Choice – Management of Chronic Venous Disease

Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

Recommendation 11	**Class**	**Level**
Duplex ultrasound is recommended as the primary diagnostic test of choice in suspected chronic venous disease, to reliably evaluate the specific venous anatomy and to identify the source and pattern of reflux.	I	A
Recommendation 12		
In the presence of suspected abdominal and or pelvic venous pathology, duplex ultrasound is recommended before phlebography, computed tomography venography, and magnetic resonance venography examinations.	I	C
Recommendation 13	**Class**	**Level**
Duplex ultrasound is recommended for the assessment of recurrent varicose veins to identify the source of recurrence.	I	C

Wittens C. Eur J Vasc Endovasc Surg (2015) 49, 678e737

The care of patients with varicose veins and associated chronic venous diseases: Clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum

We recommend a cutoff value of 1 second for abnormally reversed flow (reflux) in the femoral and popliteal veins and of 500 ms for the great saphenous vein, the small saphenous vein, the tibial, deep femoral, and the perforating veins.	1	B
We recommend that in patients with chronic venous insufficiency, duplex scanning of the perforating veins is performed selectively. We recommend that the definition of "pathologic" perforating veins includes those with an outward flow of duration of ≥500 ms, with a diameter of ≥3.5 mm and a location beneath healed or open venous ulcers (CEAP class C_5-C_6).	1	B

Superficial system ant the others : 500 ms
Deep vein (FV,PV) : 1,000 ms
Pathologic perforating vein : > 500 ms + ≥ 3.5 mm

Gloviczki P. J Vasc Surg 2011

Eur J Vasc Endovasc Surg (2015) 49, 678—737

Editor's Choice — Management of Chronic Venous Disease

Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

Recommendation 16	Class	Level
Phlebography may be considered in cases where other diagnostic tools are inconclusive (mainly in the diagnosis of abdominal/pelvic vein diseases).	IIb	B

Wittens C. Eur J Vasc Endovasc Surg (2015) 49, 678e737

Eur J Vasc Endovasc Surg (2015) 49, 678–737

Editor's Choice – Management of Chronic Venous Disease

Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

Recommendation 17	Class	Level
To evaluate patients with post-thrombotic syndrome or clinical suspicion of other forms of iliac or inferior vena cava obstruction, duplex ultrasound examination of the veins of the lower limbs and abdominopelvic veins is recommended (whenever feasible).	I	C
Recommendation 18		
In patients with clinical signs of persistent venous hypertension (clinical class C3-C6, symptoms of venous claudication, venous collaterals on pubis or abdomen, or rapid recurrence of varicose veins) with or without a history of deep venous thrombosis, additional investigation of the venous system should be considered. This should include imaging of the iliac veins and inferior vena cava.	IIa	C

Wittens C. Eur J Vasc Endovasc Surg (2015) 49, 678e737

Eur J Vasc Endovasc Surg (2015) 49, 678–737

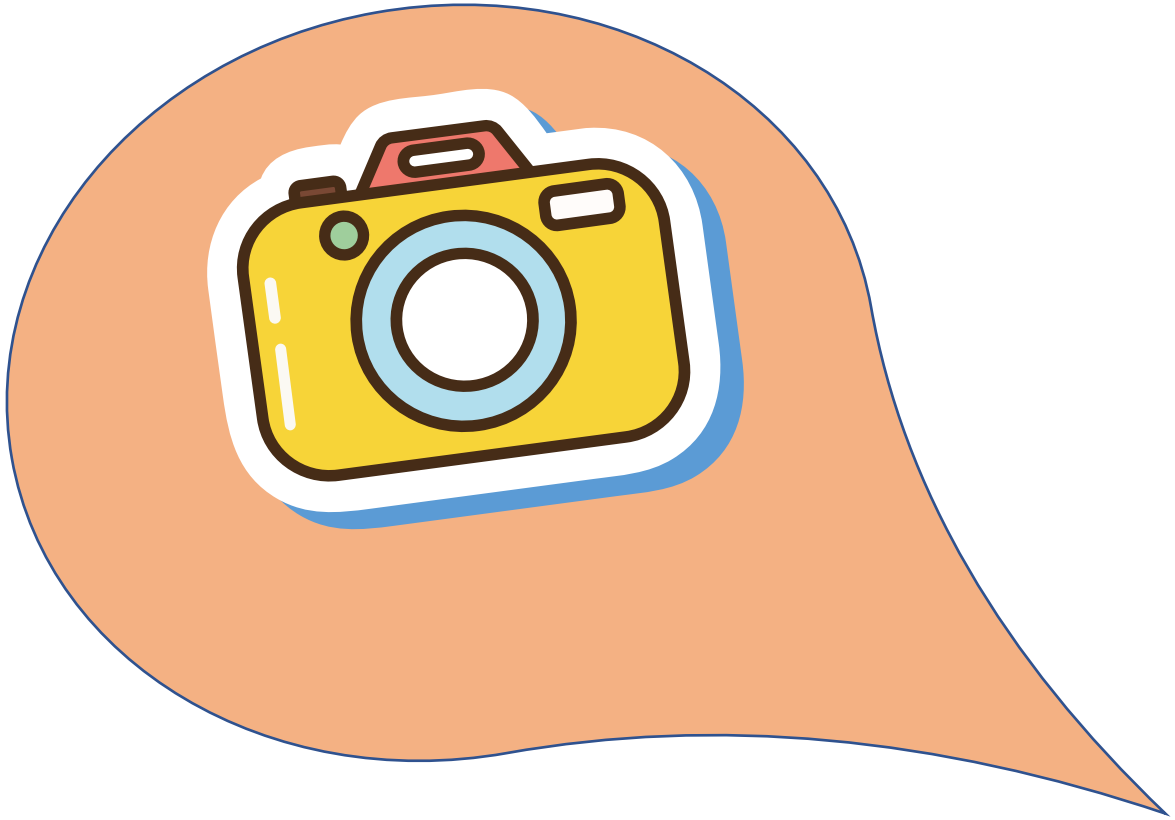
Editor's Choice – Management of Chronic Venous Disease

Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

Recommendation 19		
If there is an indication to treat supra-inguinal venous pathology, additional imaging (magnetic resonance venography and computed tomography venography) is recommended.	I	C
Recommendation 20		
If both magnetic resonance venography and computed tomography venography are inadequate, intravascular ultrasound may be considered as an additional technique for identifying and treating ilio-caval obstruction.	IIb	C

Wittens C. Eur J Vasc Endovasc Surg (2015) 49, 678e737

3. New CEAP



(Clinical-Etiology-Anatomy-Pathophysiology) classification

UPDATED CLASSIFICATION

Editors' Choice

The 2020 update of the CEAP classification system and reporting standards

Fedor Lurie, MD, PhD,[a,b] Marc Passman, MD,[c] Mark Meisner, MD,[d] Michael Dalsing, MD,[e] Elna Masuda, MD,[f] Harold Welch, MD,[g] Ruth L. Bush, MD,[h] John Blebea, MD,[i] Patrick H. Carpentier, MD,[j] Marianne De Maeseneer, MD,[k] Anthony Gasparis, MD,[l] Nicos Labropoulos, MD,[l] William A. Marston, MD,[m] Joseph Rafetto, MD,[n] Fabricio Santiago, MD,[o] Cynthia Shortell, MD,[p] Jean Francois Uhl, MD,[q] Tomasz Urbanek, MD,[r] André van Rij, MD,[s] Bo Eklof, MD,[f] Peter Gloviczki, MD,[t] Robert Kistner, MD,[f] Peter Lawrence, MD,[u] Gregory Moneta, MD,[v] Frank Padberg, MD,[w] Michel Perrin, MD,[x] *and* Thomas Wakefield, MD,[b] *Toledo, Ohio; Ann Arbor and Saginaw, Mich; Birmingham, Ala; Seattle, Wash; Indianapolis, Ind; Honolulu, Hi; Burlington and Boston, Mass; Houston, Tex; Grenoble, Paris, Lyon and Décines, France; Rotterdam, The Netherlands; Stony Brook, NY; Chapel Hill and Durham, NC; Goiania, Brazil; Katowice, Poland; Otago, New Zealand; Rochester, Minn; Los Angeles, Calif; Portland, Ore; Newark, NJ*

Lurie F. J Vasc Surg: Venous and Lym Dis 2020;8:342-52.

Adding Corona phlebectatica as the C4c clinical subclass,

Introducing the modifier "r" for recurrent varicose veins and recurrent venous ulcers

Table III. The 2020 revision of CEAP: Summary of clinical (C) classifications

C class	Description
C_0	No visible or palpable signs of venous disease
C_1	Telangiectasias or reticular veins
C_2	Varicose veins
C_{2r}	Recurrent varicose veins
C_3	Edema
C_4	Changes in skin and subcutaneous tissue secondary to CVD
C_{4a}	Pigmentation or eczema
C_{4b}	Lipodermatosclerosis or atrophie blanche
C_{4c}	Corona phlebectatica
C_5	Healed
C_6	Active venous ulcer
C_{6r}	Recurrent active venous ulcer

CVD, Chronic venous disease.
Each clinical class subcharacterized by a subscript indicating the presence (symptomatic, *s*) or absence (asymptomatic, *a*) of symptoms attributable to venous disease.

Lurie F. J Vasc Surg: Venous and Lym Dis 2020;8:342-52.

Table IV. The 2020 revision of CEAP: Summary of etiologic (E) classification

E class	Description
E_p	Primary
E_s	Secondary
E_{si}	Secondary – intravenous
E_{se}	Secondary – extravenous
E_c	Congenital
E_n	No cause identified

Esi : intravenous causes

- Postthrombotic changes,
- Traumatic arteriovenous fistulas,
- Primary intravenous sarcoma,
- Other luminal changes inside the vein.

Ese (Extravenous causes-no venous wall or valve damage)

- Systemically (obesity and congestive heart failure
- Locally by extrinsic compression (extravenous tumour and local perivenous fibrosis)
- Muscle pump dysfunction due to motor disorders (paraplegia, arthritis, chronic immobility, and frozen ankle)

Lurie F. J Vasc Surg: Venous and Lym Dis 2020;8:342-52.

Table V. The 2020 revision of CEAP: Summary of anatomic (A) classification

A class		Description	
A_s	Superficial		
	Old	*New*[a]	*Description*
	1.	Tel	Telangiectasia
	1.	Ret	Reticular veins
	2.	GSVa	Great saphenous vein above knee
	3.	GSVb	Great saphenous vein below knee
	4.	SSV	Small saphenous vein
		AASV	Anterior accessory saphenous vein
	5.	NSV	Nonsaphenous vein
A_d	Deep		
	Old	*New*[a]	*Description*
	6.	IVC	Inferior vena cava
	7.	CIV	Common iliac vein
	8.	IIV	Internal iliac vein
	9.	EIV	External iliac vein
	10.	PELV	Pelvic veins
	11.	CFV	Common femoral vein
	12.	DFV	Deep femoral vein
	13.	FV	Femoral vein
	14.	POPV	Popliteal vein
	15.	TIBV	Crural (tibial) vein
	15.	PRV	Peroneal vein
	15.	ATV	Anterior tibial vein
	15.	PTV	Posterior tibial vein
	16.	MUSV	Muscular veins
	16.	GAV	Gastrocnemius vein
	16.	SOV	Soleal vein
Ap	Perforator		
	Old	*New*[a]	*Description*
	17.	TPV	Thigh perforator vein
	18.	CPV	Calf perforator vein
A_n	No venous anatomic location identified		

[a] New specific anatomic location(s) to be reported under each P (pathophysiologic) class to identify anatomic location(s) corresponding to P class.

Replacing numeric descriptions of the venous segments by their common abbreviations

Table VI. The 2020 revision of CEAP: Summary of pathophysiologic (P) classification

P class	Description
P_r	Reflux
P_o	Obstruction
$P_{r,o}$	Reflux and obstruction
P_n	No pathophysiology identified
**Advanced	New abbreviations for specific A anatomic location(s) to be reported under each P Pathophysiologic class to identify anatomic location(s) corresponding to P class.

Lurie F. J Vasc Surg: Venous and Lym Dis 2020;8:342-52.

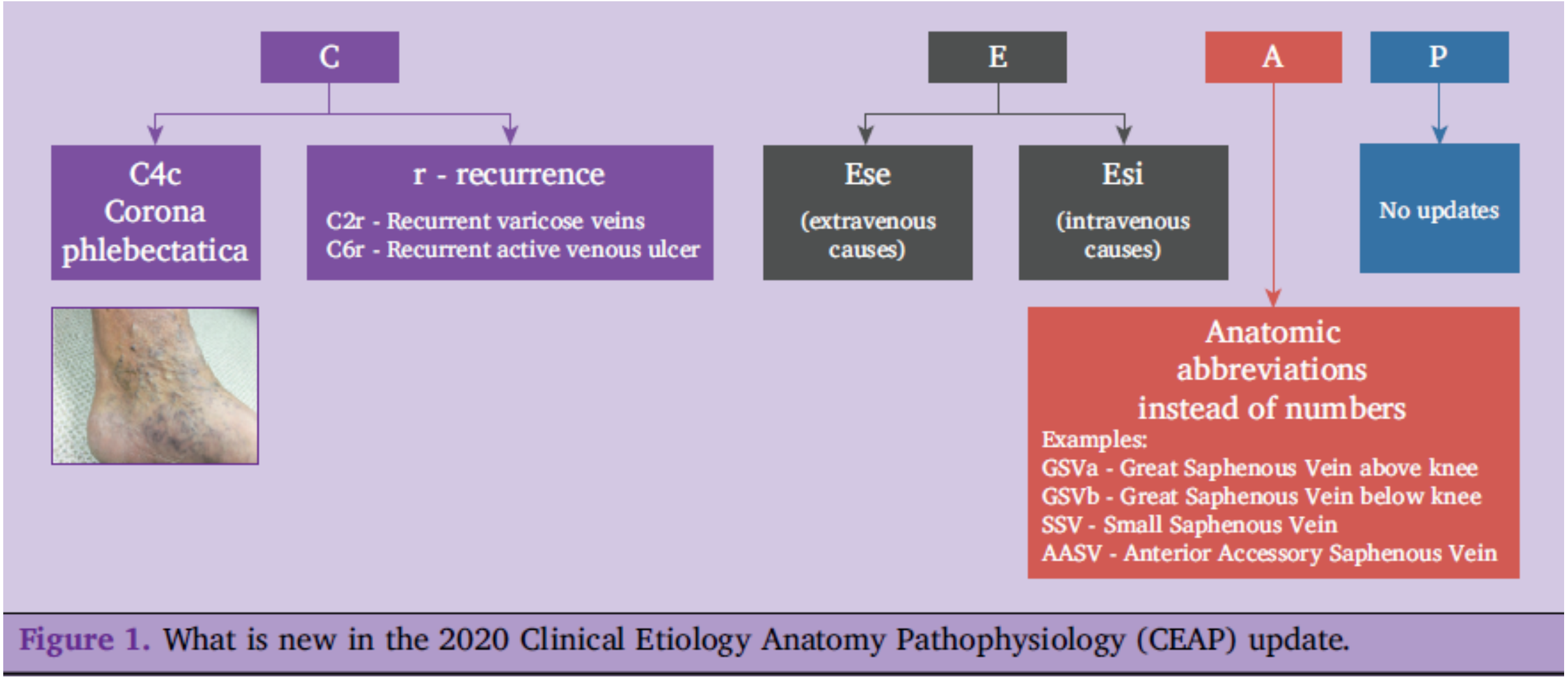


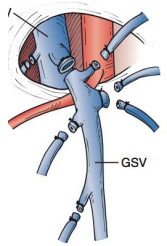
Figure 1. What is new in the 2020 Clinical Etiology Anatomy Pathophysiology (CEAP) update.

Lurie F. J Vasc Surg: Venous and Lym Dis 2020;8:342-52.

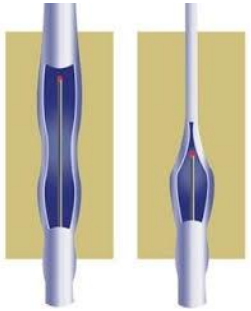
4. Treatment modality

Treatment of CVI

Conservative treatment



Open venous surgery



Endovenous ablation

Conservative treatment

- **Gradual compression stocking**
- **Pharmacologic Therapy**
- **Leg elevation**
- **weight loss programs**
- **Calf muscle exercise**
- **Wound and skin care**

The care of patients with varicose veins and associated chronic venous diseases: Clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum

Guideline 8. Medical treatment

Guideline No.	*8. Medical treatment*	*GRADE of recommendation*	*Level of evidence*
		1. Strong	A. High quality
		2. Weak	B. Moderate quality
			C. Low or very low quality
8.1	We suggest venoactive drugs (diosmin, hesperidin, rutosides, sulodexide, micronized purified flavonoid fraction, or horse chestnut seed extract [aescin]) for patients with pain and swelling due to chronic venous disease, in countries where these drugs are available.	2	B
8.2	We suggest using pentoxifylline or micronized purified flavonoid fraction, if available, in combination with compression, to accelerate healing of venous ulcers.	2	B

Gloviczki P. J Vasc Surg 2011

Eur J Vasc Endovasc Surg (2015) 49, 678—737

Editor's Choice — Management of Chronic Venous Disease

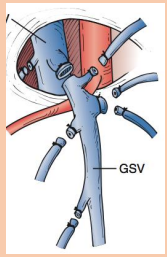
Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)

Recommendation 35	Class	Level	References
Sulodexide and micronized purified flavonoid fraction should be considered as an adjuvant to compression therapy in patients with venous ulcers.	IIa	A	295, 297-299, 301
Recommendation 36			
The routine use of zinc, oral antibiotics, horse chestnut seed extract, and pentoxifylline is not recommended in patients with venous leg ulceration.	III	B	208, 287-290, 294, 296
Recommendation 37			
Acetylsalicylic acid is not recommended to promote healing of venous leg ulcers as routine treatment, but it may be considered in therapy of resistant ulcers.	III	C	291-293

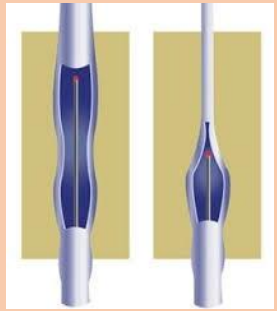
Wittens C. Eur J Vasc Endovasc Surg (2015) 49, 678e737

Treatment

Conservative treatment



Open venous surgery



Endovenous ablation

Treatment of venous disorders

Reflux

Venous pathophysiology	Primary Treatment	Secondary Treatment
Superficial saphenous tributaries	For varicose vein -Saphenous vein ablation(1B) -Compression(2C) For venous ulcer -Saphenous ablation+ Compression (1A)	-Sclerotherpy(1B) -Foam(1B) -Ligation and strippling(2B) -Phlebectomy or pharmacologic (2B) -Phebectomy or sclerotherapy (1B)
Deep	Compression	Valve reconstruction
Perforaor	Compression (C5,6)	Ablation, foam, ligation or SEPS (2B)

JOSEPH.RUTHERFORD'S VASCULAR SURGERY,8 ed.Chapter 55. p 842-857

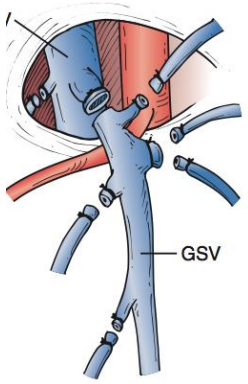
Treatment of venous disorders

Obstruction (Non acute)

Venous pathophysiology	Primary Treatment	Secondary Treatment
Central	Compression Venous stenting	Venous stenting
Peripheral	Compression	Valve reconstruction
Muscle pump dysfunction	Compression	Structured exercise

JOSEPH.RUTHERFORD'S VASCULAR SURGERY,8 ed.Chapter 55. p 842-857

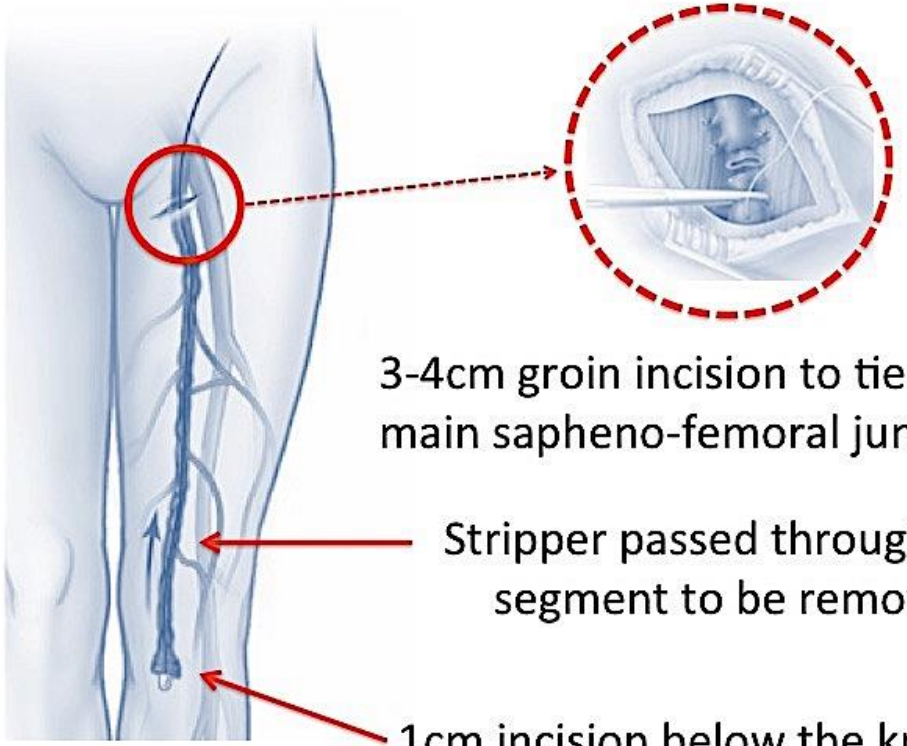
Treatment



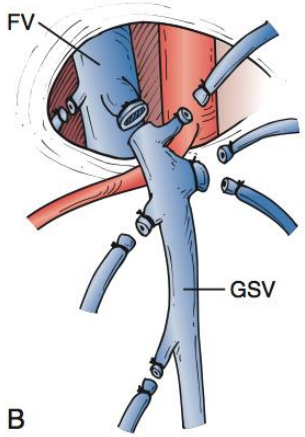
Open venous surgery

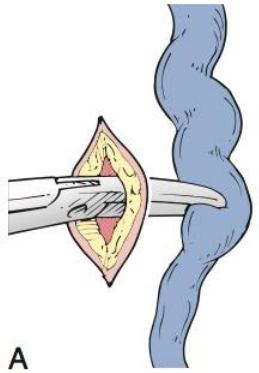
- Ligation
- Venous stripping
- Stab phlebectomy

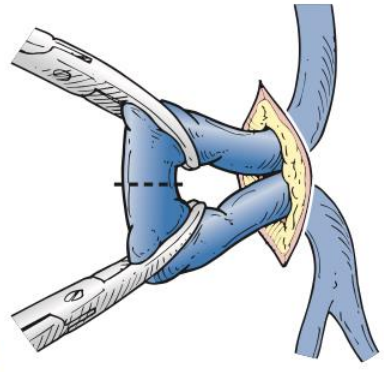
High ligation and venous stripping



High ligation

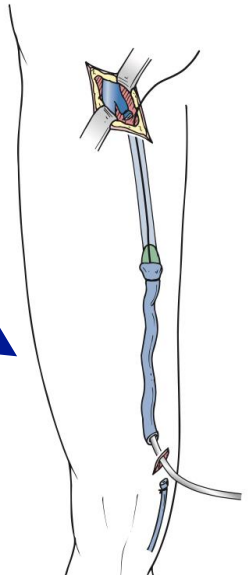


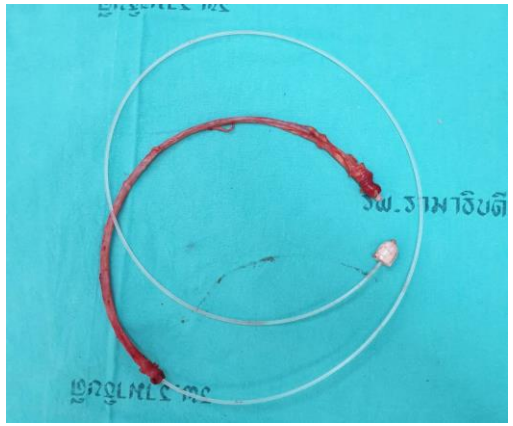




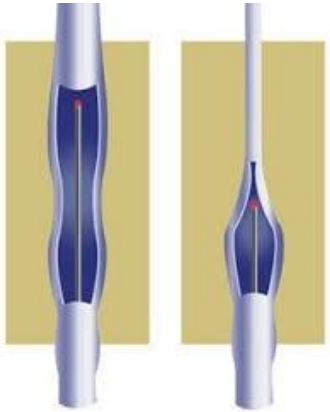
Ambulatory phlebectomy

Great Saphenous Vein Stripping



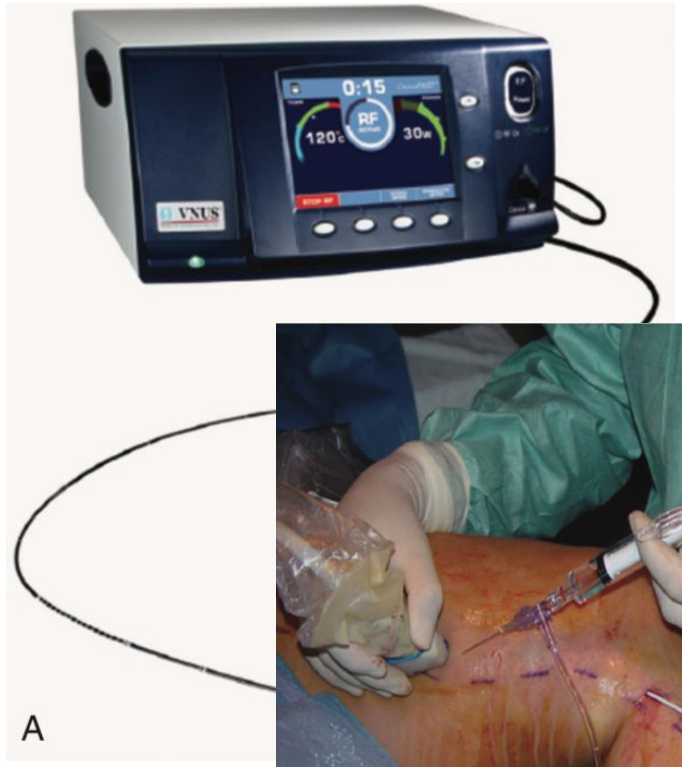


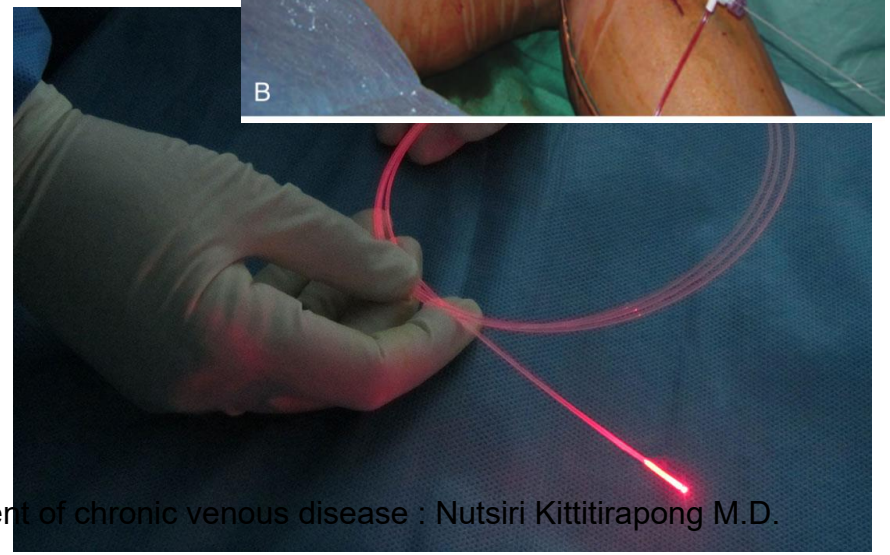
Treatment

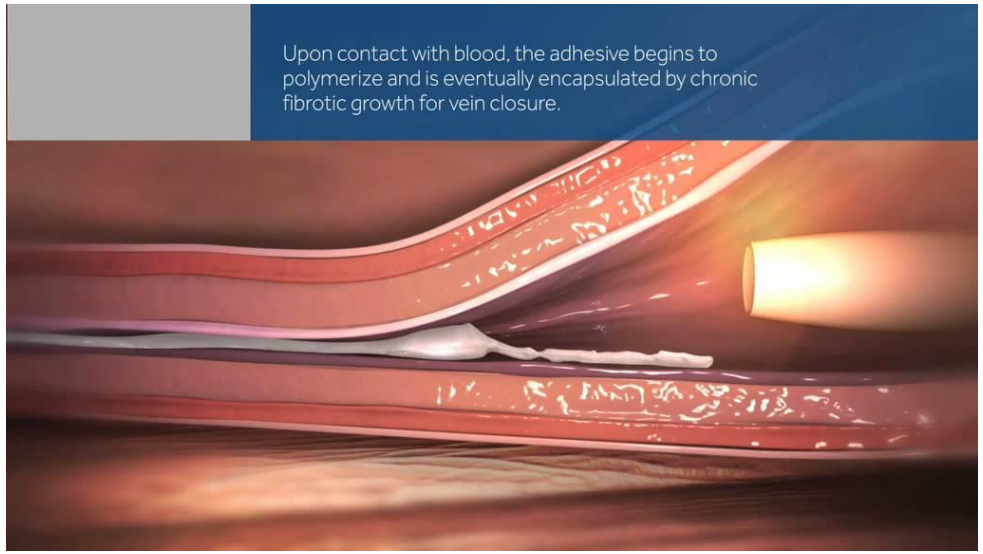


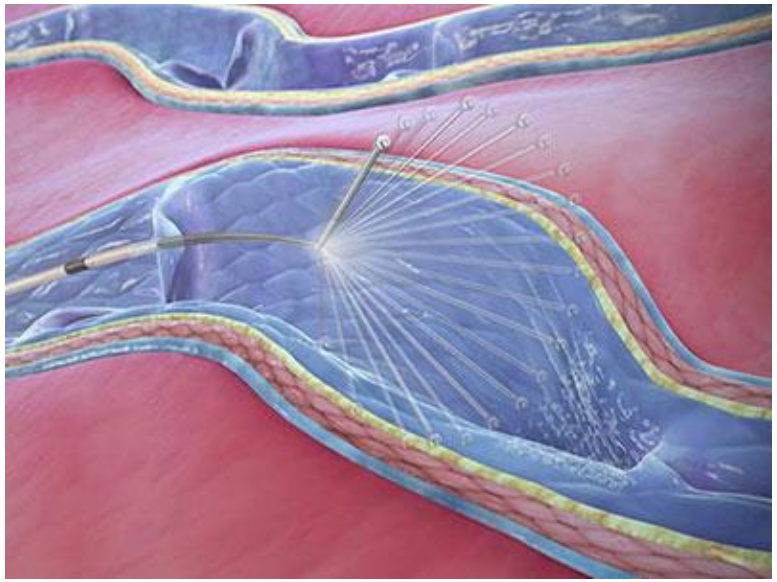
Endovenous ablation

- Thermal:
  - Radiofrequency ablation (RFA)
  - Endovenous laser ablation (EVLA)
- Non thermal:
  - Sclerotherapy
  - Mechanicochemical Ablation (MOCA; ClariVein device)
  - Adhesive Closure(VenaSeal Closure System)

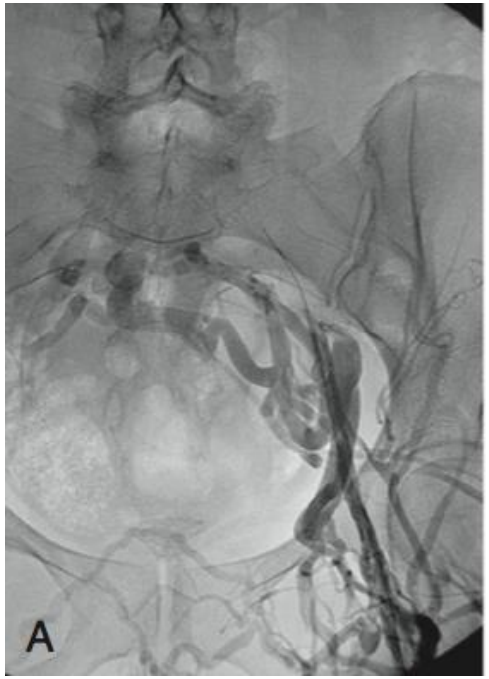


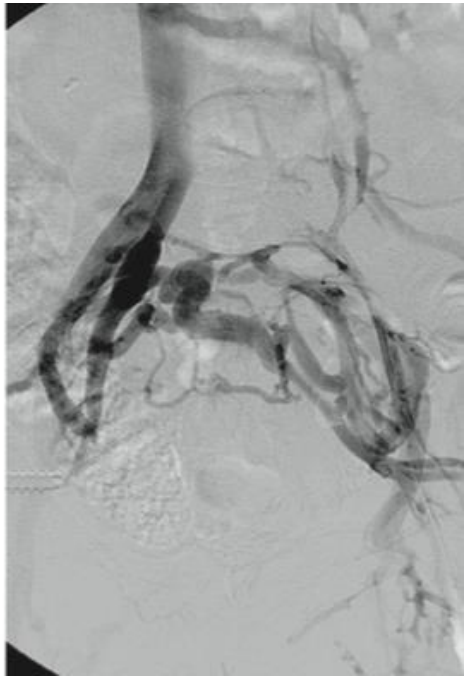


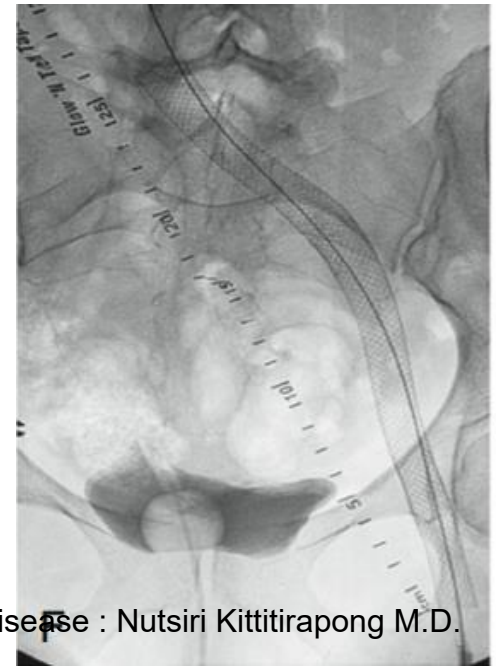


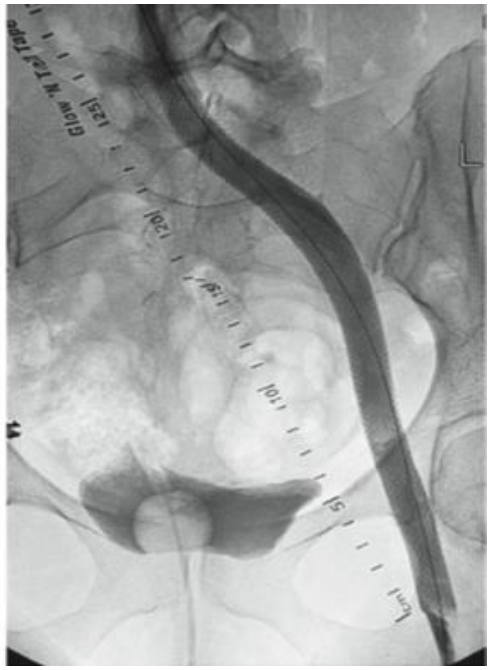


Endovenous ablation





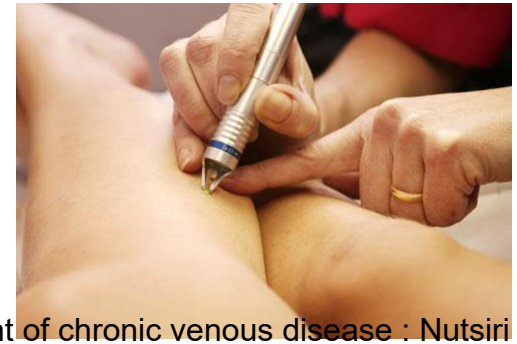




Venous stenting

C1 : Treatment

- Cosmetic concern ?
  - Yes : Laser, Sclerotherapy
  - No : Conservative
- +/- Structural vein treatment



C2 : treatment

- Symptomatic
  - GSV, SSV reflux?
    - Yes → Venous stripping or EVT
    - No → Conservative +/- superficial veins treatment
- Asymptomatic
  - Cosmetic concern?
    - Yes → EVT or Venous stripping +/- superficial veins treatment
    - No → Conservative treatment

Editors' Choice

From the American Venous Forum

The 2020 appropriate use criteria for chronic lower extremity venous disease of the American Venous Forum, the Society for Vascular Surgery, the American Vein and Lymphatic Society, and the Society of Interventional Radiology

Check for updates

Summary

	Procedure	Appropriateness category
1.1	Ablation of the GSV in a symptomatic patient with varicose veins, edema due to venous disease, skin or subcutaneous changes, healed or active ulcers (CEAP classes 2-6), when the GSV demonstrates axial reflux *with or without* SFJ reflux	Appropriate
1.2	Ablation of the below-knee GSV in a symptomatic patient with skin or subcutaneous changes, healed or active ulcers (CEAP classes 4-6), when there is segmental GSV reflux below the knee directed to the affected area	Appropriate (see Section 1 discussion)
1.3	Ablation of the below-knee GSV in a symptomatic patient with *edema* due to venous disease (CEAP class 3), provided careful clinical judgment is exercised because of the potential for a wide range of coexisting nonvenous causes of edema	May be appropriate (see Section 1 discussion)

CEAP, Clinical, Etiology, Anatomy, and Pathophysiology; *SFJ*, saphenofemoral junction.

Masuda E. J Vasc Surg: Venous and Lym Dis 2020;8:505-25

Editors' Choice

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Check for updates

Summary

No.	Procedure	Appropriateness category
1.4	Ablation of the SSV in a symptomatic patient with varicose veins, edema due to venous disease, skin or subcutaneous changes, healed or active ulcers (CEAP classes 2-6), when the SSV demonstrates reflux directed to affected area	Appropriate
1.5	Ablation of the SSV with reflux that communicates with the GSV or thigh veins by intersaphenous vein, in a symptomatic patient with skin or subcutaneous changes, healed or active ulcers (CEAP classes 4-6), when the SSV demonstrates reflux directed to affected area	Appropriate

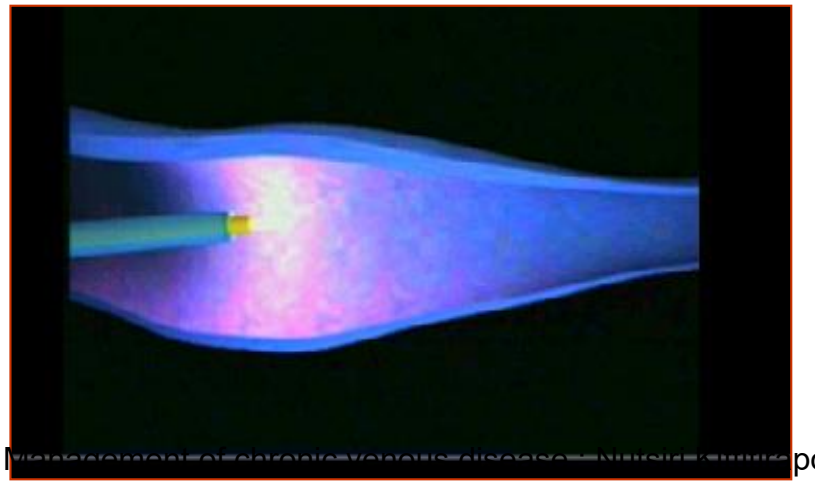
CEAP, Clinical, Etiology, Anatomy, and Pathophysiology; *GSV*, great saphenous vein.

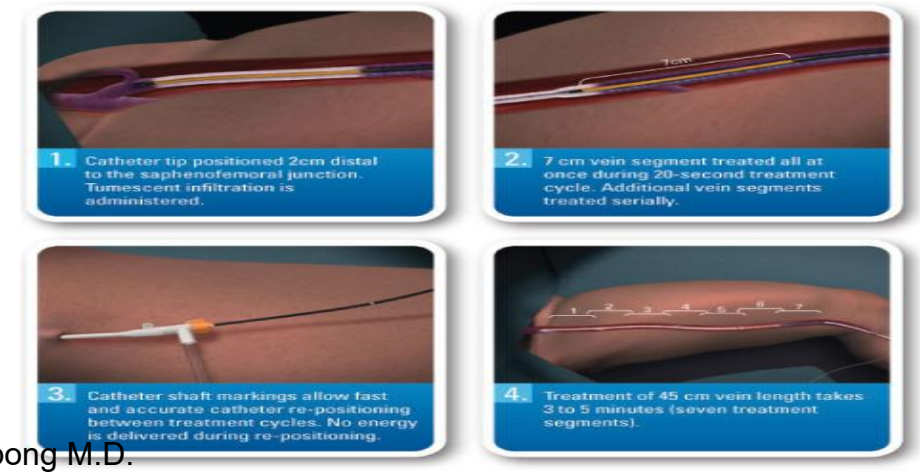
Masuda E. J Vasc Surg: Venous and Lym Dis 2020;8:505-25

GSV treatment

Make It Disappear

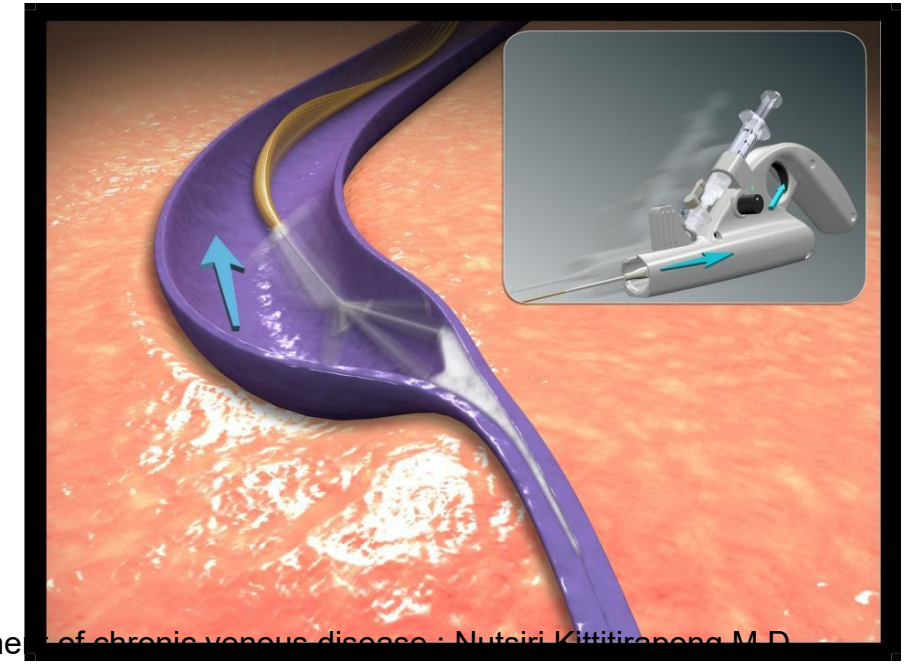
- Venous stripping
- Endovenous therapy
  - Thermal : EV laser ablation , EV RF ablation
  - Non-thermal : MOCA, Glue injection

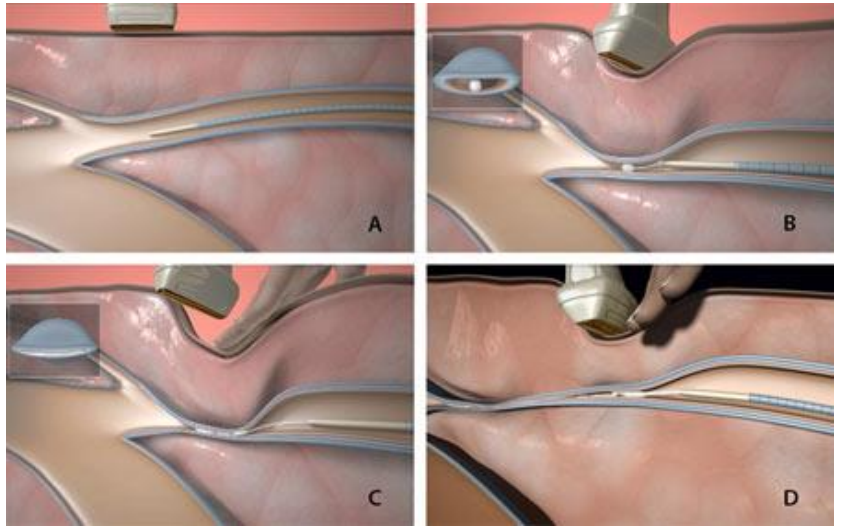




SSV treatment

- High ligation/separation +/- Sclerotherapy
- Endovenous therapy
  - Non-thermal > Thermal





C3 : treatment

- Rule out and treat other causes of edema before

*****Conservative treatment*****

  - ส่วนใหญ่เกิดจาก muscle pumping defect
  - หลายครั้งไม่พบ structural vein reflux
  - หลายครั้งรักษา structural vein แล้วไม่หายบวม,ผื่น

- GSV, SSV +/- perforator treatment in
  - Symptomatic
  - Cosmetic concern for varicose vein
  - Failed conservative treatment

Conservative treatment

- **Indication**
  - **Muscle pumping defect**
    - Long standing or long sitting behavior
      - แม่บ้าน ขายของ
      - Wheel chair dependent
    - Calf muscle atrophy
      - Stroke
    - Stiff ankle joint
    - Obesity
  - Refuse structural vein treatment
  - Post-thrombotic syndrome
  - Combine to structural vein treatment

Conservative treatment

- Exercise
  - Tip toe exercise, calf muscle strengthening
- Gradual Compression
  - No ulcer : GCS
  - Ulcer : Elastic bandage
  - Recurrent or slowly heal ulcer : multicomponent bandage
- Leg elevation

Conservative treatment

- Venotonic drug
  - Aescin, Flavunoids, Sulodexide, Pentoxifylline
- Weight reduction
- Intermittent Compression Device
  - IPC, Venawave

****** COMPLIANCE ******

C4,C5,C6 : treatment

- Venous pumping defect ?
  - Yes → aggressive conservative treatment
- Structural vein defect ?
  - Superficial, perforator → treat
  - Deep → conservative
- Comprehensive local wound care
  - Advance wound care
  - Skin graft coverage

Editors' Choice

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Check for updates

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1.3	Ablation of the below-knee GSV in a symptomatic patient with *edema* due to venous disease (CEAP class 3), provided careful clinical judgment is exercised because of the potential for a wide range of coexisting nonvenous causes of edema	May be appropriate (see Section 1 discussion)

CEAP, Clinical, Etiology, Anatomy, and Pathophysiology; *SFJ*, saphenofemoral junction.

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Summary

No.	Procedure	Appropriateness category
1.4	Ablation of the SSV in a symptomatic patient with varicose veins, edema due to venous disease, skin or subcutaneous changes, healed or active ulcers (CEAP classes 2-6), when the SSV demonstrates reflux directed to affected area	Appropriate
1.5	Ablation of the SSV with reflux that communicates with the GSV or thigh veins by intersaphenous vein, in a symptomatic patient with skin or subcutaneous changes, healed or active ulcers (CEAP classes 4-6), when the SSV demonstrates reflux directed to affected area	Appropriate

CEAP, Clinical, Etiology, Anatomy, and Pathophysiology; *GSV*, great saphenous vein.

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Summary

No.	Procedure	Appropriateness category
5.1	Perforator vein treatment of veins with high outward flow and large diameter directed toward affected area in a symptomatic patient with skin or subcutaneous changes, healed or active ulcers (CEAP classes 4-6)	Appropriate (see Section 5 discussion)
5.2	Perforator vein treatment of veins with high outward flow and large diameter directed toward affected area in a symptomatic patient with edema due to venous disease (CEAP class 3), provided careful clinical judgment is exercised because of the potential for a wide range of coexisting nonvenous causes of edema	May be appropriate (see Section 5 discussion)
5.3	Perforator vein treatment of veins with high outward flow and large diameter directed toward affected area in a symptomatic patient with telangiectasia or varicose veins (CEAP classes 1-2)	Rarely appropriate
5.4	Perforator vein treatment in an *asymptomatic* patient with visible telangiectasia or varicose veins (CEAP classes 1-2)	Never appropriate

CEAP, Clinical, Etiology, Anatomy, and Pathophysiology; *GSV*, great saphenous vein; *SFJ*, saphenofemoral junction.

Masuda E. J Vasc Surg: Venous and Lym Dis 2020;8:505-25

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Check for updates

Summary

No.	Procedure	Appropriateness category
6.1	Iliac vein or IVC stenting for obstructive disease *without* superficial truncal reflux as first-line treatment in a symptomatic patient with skin or subcutaneous changes, healed or active ulcers (CEAP classes 4-6)	Appropriate (see Section 6 discussion)
6.2	Iliac vein or IVC stenting for obstructive disease *with or without* superficial truncal reflux as first-line therapy in a symptomatic patient with *edema* due to venous disease (CEAP class 3), provided careful clinical judgment is exercised because of the potential for a wide range of coexisting nonvenous causes of edema	May be appropriate (see Section 6 discussion)
6.3	Iliac vein or IVC stenting for obstructive disease in an asymptomatic patient for iliac vein compression, such as May-Thurner compression, for incidental finding by imaging or telangiectasia (CEAP class 1)	Never appropriate

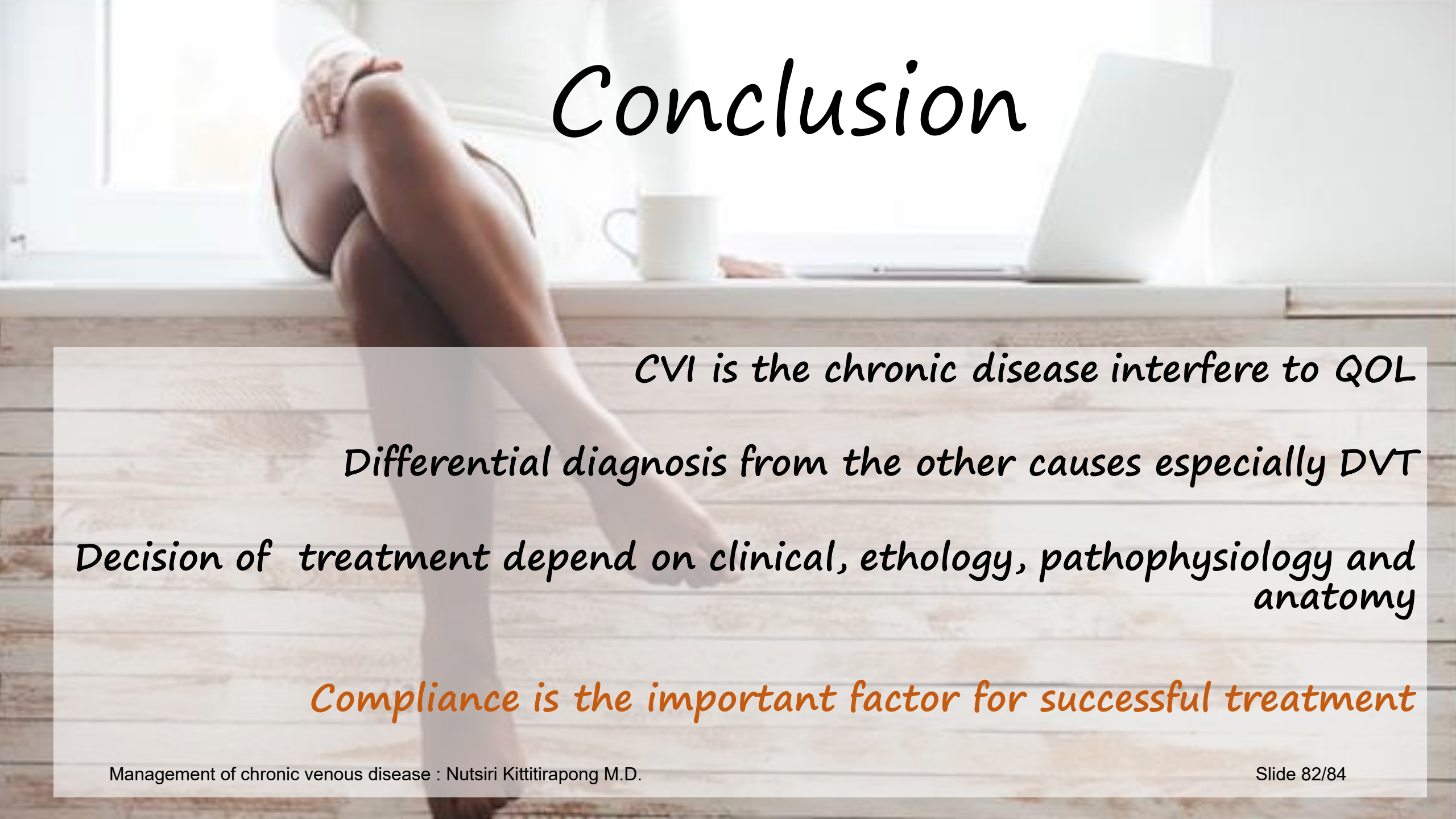
CEAP, Clinical, Etiology, Anatomy, and Pathophysiology.

Masuda E. J Vasc Surg: Venous and Lym Dis 2020;8:505-25

Post-thrombotic syndrome

- Long term sequelae of inadequate DVT treatment
- **Conservative treatment first**
- **“ อย่ามือบอน ”**
- Treat GSV, SSV +/- perforator only in
  - failed conservative treatment
  - patent deep vein (venography)
- Chronic isolated iliac vein or IVC stenosis → PTA

Conclusion



CVI is the chronic disease interfere to QOL

Differential diagnosis from the other causes especially DVT

Decision of treatment depend on clinical, ethology, pathophysiology and anatomy

Compliance is the important factor for successful treatment

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คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี

ภาควิชาศัลยศาสตร์ คณะแพทยศาสตร์โรงพยาบาลรามาธิบดี
สาขาวิชาศัลยศาสตร์หลอดเลือดและปลูกถ่ายอวัยวะ

รับสมัครแพทย์ประจำบ้านต่อยอด สาขาศัลยศาสตร์หลอดเลือด

Vascular Surgery Fellowship

ประจำปีการศึกษา 2563 จำนวน 3 อัตรา

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Ramathibodi Surgical Conference

Management of chronic venous disease

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