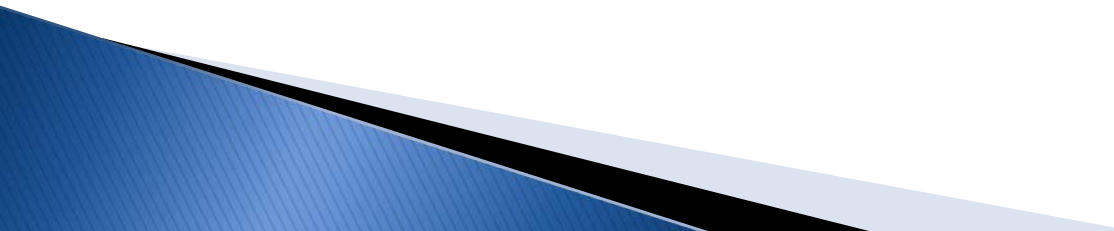


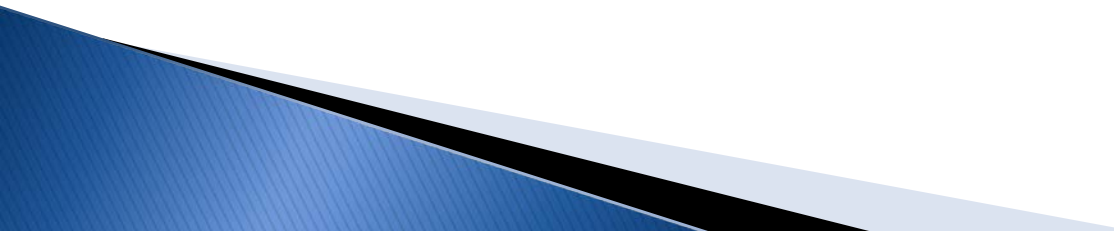
Chronic venous disorders

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Phlebology Review, March 2014

Agenda

- ▶ Classification – CEAP
 - ▶ CVD vs. CVI
 - ▶ Epidemiology – prevalence, risk factors
 - ▶ Natural history
 - ▶ CEAP class C1–C2 signs & symptoms & management
 - ▶ Non–saphenous reflux
 - ▶ Venous malformations
 - ▶ Recurrent varicose veins
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CEAP classification scheme

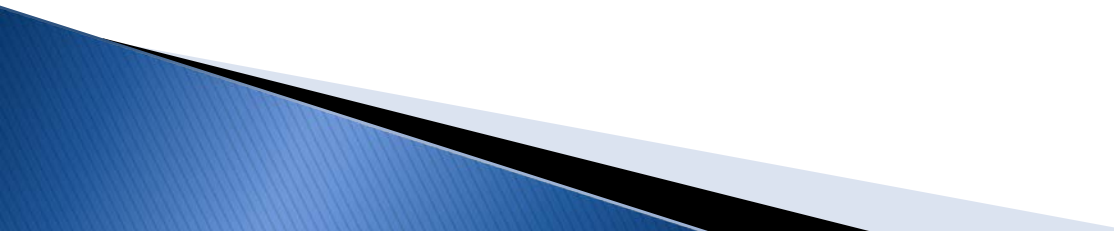
- ▶ CVD classification scheme
 - ▶ “Lack of precision” in CVD diagnosis (1993)
 - ▶ C = clinical manifestations (signs)
 - ▶ E = etiology
 - ▶ A = anatomy
 - ▶ P = pathophysiology
- 

CEAP class

- C₀ No visible or palpable signs of venous disease.
- C₁ Telangiectasies or reticular veins.
- C₂ Varicose veins; distinguished from reticular veins by a diameter of 3 mm or more.
- C₃ Edema.
- C₄ Changes in skin and subcutaneous tissue secondary to CVD, now divided into 2 subclasses to better define the differing severity of venous disease:
 - C_{4a} Pigmentation or eczema.
 - C_{4b} Lipodermatosclerosis or atrophie blanche.
- C₅ Healed venous ulcer.
- C₆ Active venous ulcer.

Eklof, CEAP score, JVS 2004

Definitions

- ▶ Chronic venous disorders – all CEAP classes
 - ▶ Chronic venous insufficiency – CEAP classes C3–C6
 - ▶ This lecture – focus on CEAP C1–C2
 - ▶ CVI lecture – CEAP C4–C6
 - ▶ Lymphedema lecture – CEAP C3
- 

CEAP classification scheme

Etiologic classification

Ec: congenital
Ep: primary
Es: secondary (postthrombotic)
En: no venous cause identified

Anatomic classification

As: superficial veins
Ap: perforator veins
Ad: deep veins
An: no venous location identified

Pathophysiologic classification

Basic CEAP

Pr: reflux
Po: obstruction
Pr,o: reflux and obstruction
Pn: no venous pathophysiology identifiable

Venous etiology

- ▶ Degenerative
- ▶ Reflux only
- ▶ Intima retained
- ▶ Valves stretched & atrophied
- ▶ Slow progression
- ▶ Primarily superficial veins
- ▶ Inflammatory (acquired)
- ▶ Obstruction & reflux
- ▶ Intima destroyed
- ▶ Valves scarred & destroyed
- ▶ Faster progression
- ▶ Primarily deep veins

Adapted from Kistner & Eklof, Classification etiology CVD, in Gloviczki (ed), *Handbook of Venous Disorders*, 2009

Primary

Secondary

Advanced CEAP:

Same as Basic with the addition that any of 18 named venous segments can be utilized as locators for venous pathology:

Superficial veins:

1. telangiectasies/reticular veins.
2. GSV above knee.
3. GSV below knee.
4. LSV.
5. Nonsaphenous veins.

Deep veins:

6. IVC.
7. Common iliac vein.
8. Internal iliac vein.
9. External iliac vein.
10. Pelvic: gonadal, broad ligament veins, other.
11. Common femoral vein.
12. Deep femoral vein.
13. Femoral vein.
14. Popliteal vein.
15. Crural: anterior tibial, posterior tibial, peroneal veins (all paired).
16. Muscular: gastrocnemial, soleal veins, other.

Perforating veins:

17. Thigh
18. Calf.

Prevalence

- ▶ Varicose veins = 25%
- ▶ CEAP C4–C6 = 5%
- ▶ Healed ulcers = 1%
- ▶ Active ulcers = 0.5%

Risk factors

- ▶ Advanced age
- ▶ Family history
- ▶ Female gender
- ▶ Multiparity

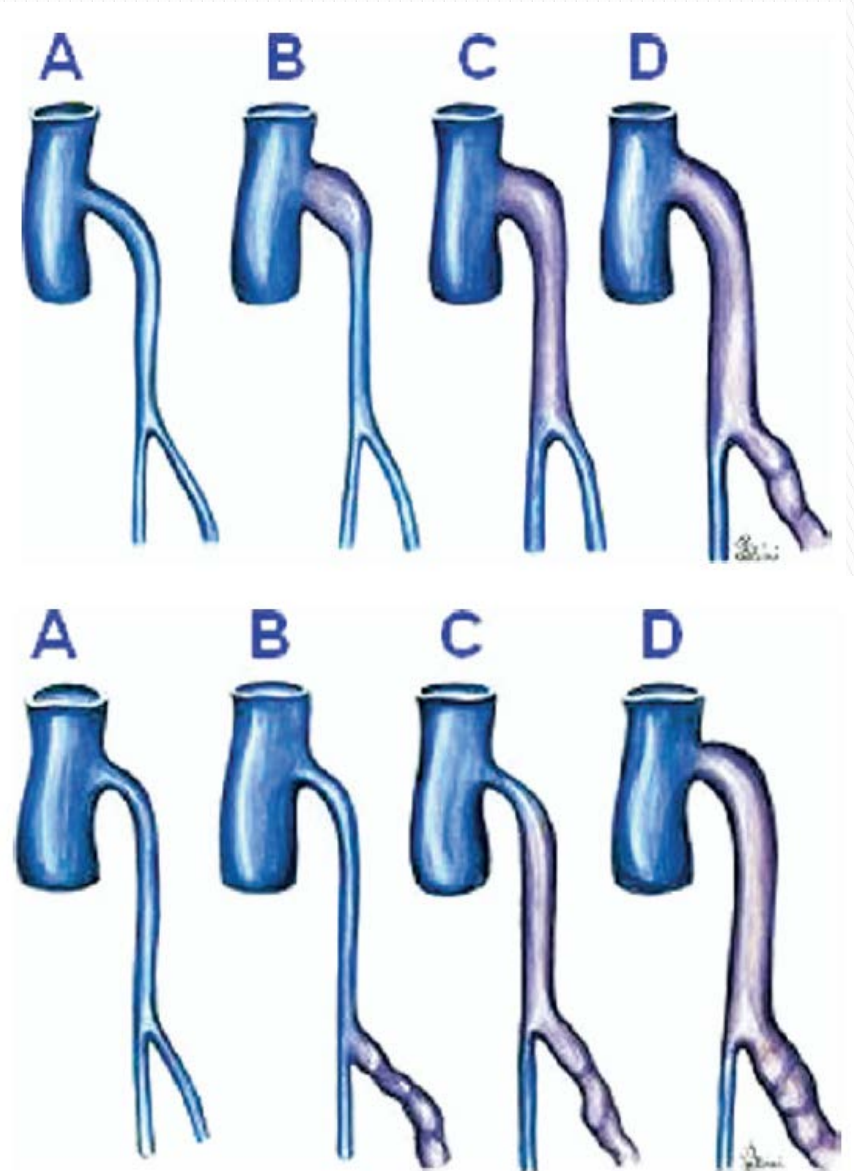
- ▶ Advanced age
- ▶ Family history
- ▶ Obesity

Varicose veins

CVI

Natural history of reflux

- ▶ Symptoms worsen slowly
- ▶ 25% show increased reflux extent at 6 months
- ▶ Progression up or down saphenous vein



Caggiati, JVS 2006

Symptoms

- ▶ Pain and discomfort – tingling, aching, burning, pain, muscle cramps, swelling, throbbing, heaviness, itching, restless legs, tired legs, leg fatigue
- ▶ CVI symptoms – ankle > calf – swelling, skin changes, ulcers
- ▶ Worse with dependency and heat
- ▶ Improved with leg elevation and compression

Differential diagnosis

Table 4.2 Differential diagnosis of lower extremity pain and discomfort

Deep or superficial venous thrombosis
Peripheral arterial disease
Iliocaval obstruction
Pelvic congestion syndrome
Proximal venous reflux (i.e., branches of the internal iliac vein)
Vascular malformation
Nutcracker syndrome
Chronic compartment syndrome
Neuralgia (i.e., sciatica)
Complex regional pain syndrome
Restless legs syndrome
Musculoskeletal (i.e., muscle/tendon/ligament sprain, muscle pain, osteoarthritis, rheumatoid arthritis)
Cellulitis

Geersen & EML, Reflux Management, in EML et al. (eds), *Phlebology, Vein Surgery & Ultrasonography*, 2014

Spider and reticular veins

- ▶ Dilated intradermal venules
 - ▶ Diameter < 1 mm diameter
 - ▶ Red, purple
 - ▶ Telangiectasias
- ▶ Dilated, bluish, subdermal, tortuous
 - ▶ 1–3 mm diameter



Spider

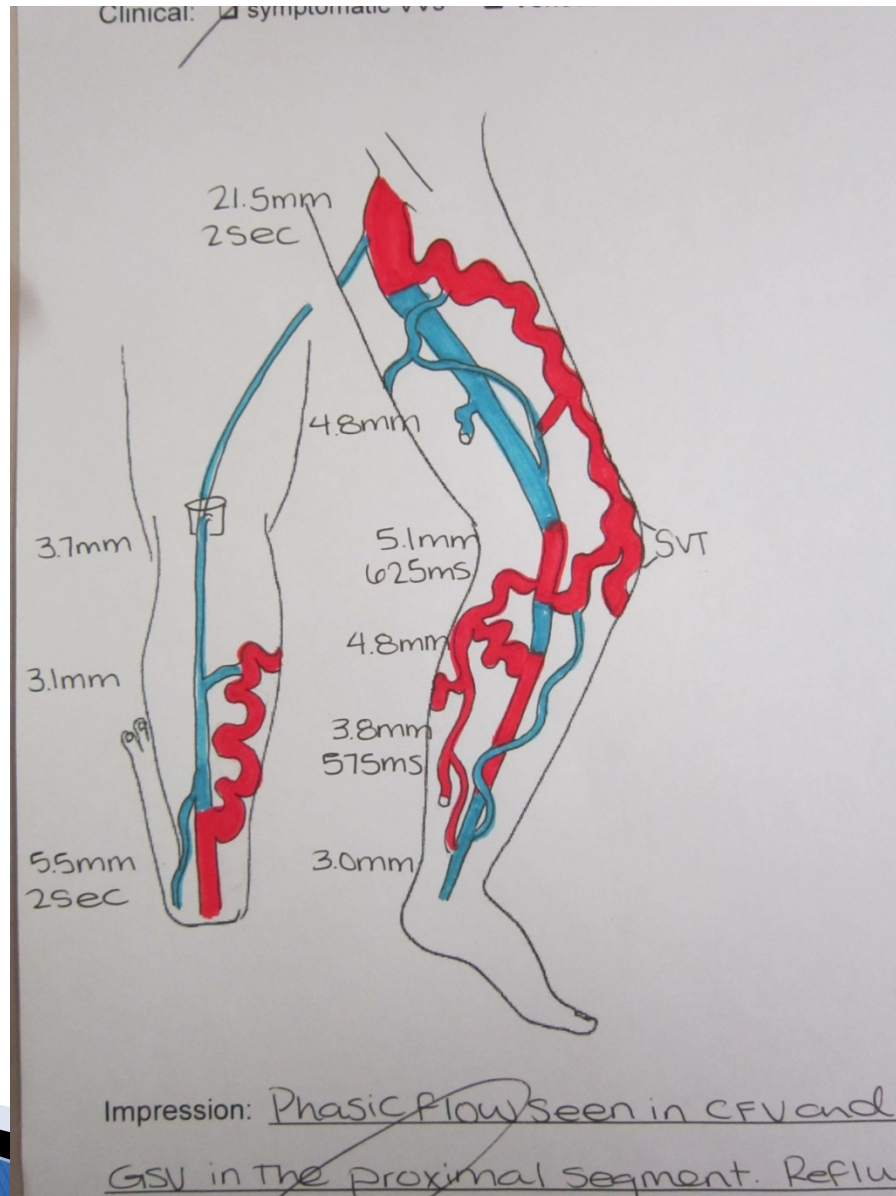
Reticular

Varicose veins

- ▶ Dilated subdermal vein
- ▶ > 3 mm diameter in upright position
- ▶ Refluxing saphenous veins can also be called “varicose”



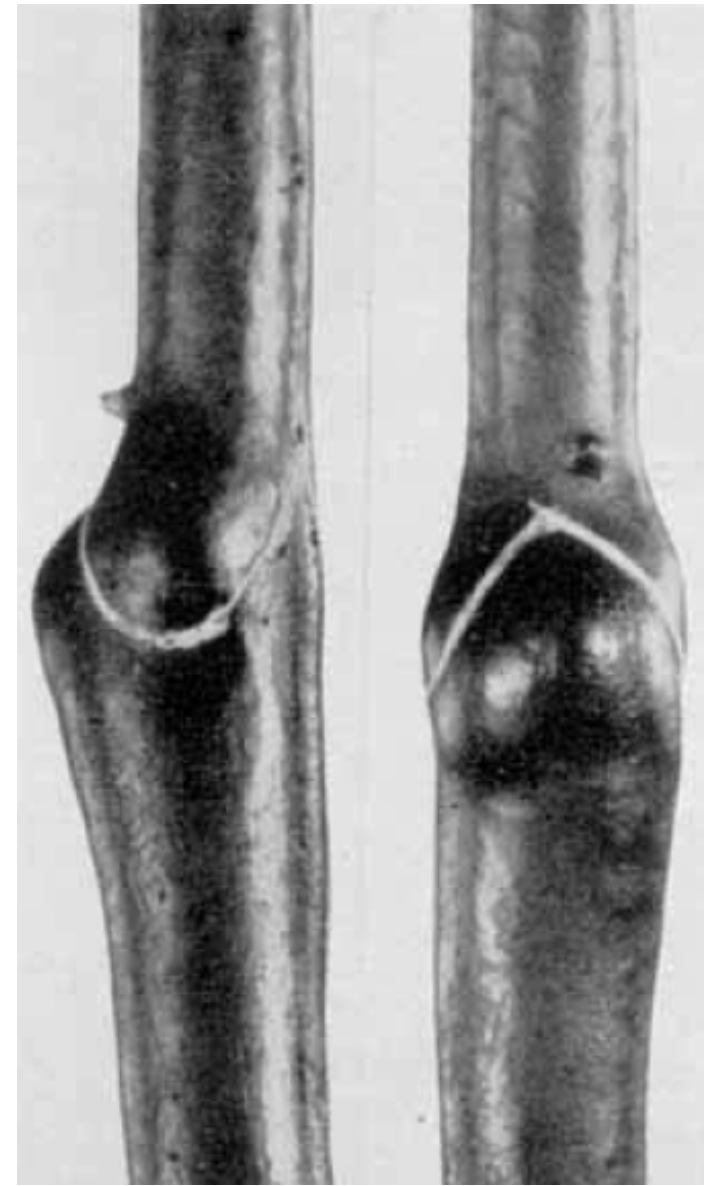
Classic CEAP class C2 case



Pathophysiology



Pascarella, Sem Vasc Surg, 2005



Cotton, Br J Surg 1961

Management goals – C1–C2

- ▶ Decrease symptoms of pain & discomfort
- ▶ Improve cosmesis by elimination of unwanted veins

Conservative measures

- ▶ Compression
- ▶ Elevation
- ▶ Exercise – walk
- ▶ Analgesia
- ▶ Weight loss



Classic treatment strategy

- ▶ Eliminate saphenous if proximal saphenous reflux
- ▶ Eliminate saphenous tributary and varicose vein reflux

Consider suprainguinal reflux



Vulvar veins



Gluteal vein

Labropoulos, JVS 2001



Courtesy C Kim

Consider non-saphenous reflux



Sciatic nerve vein



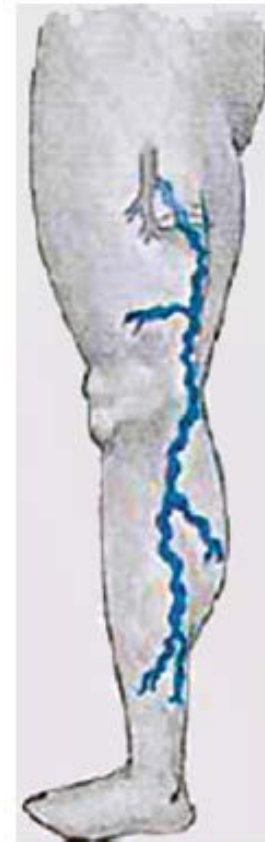
Lower posterior thigh vein



Popliteal fossa vein

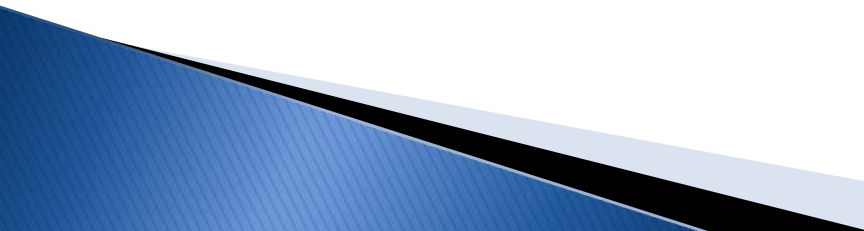


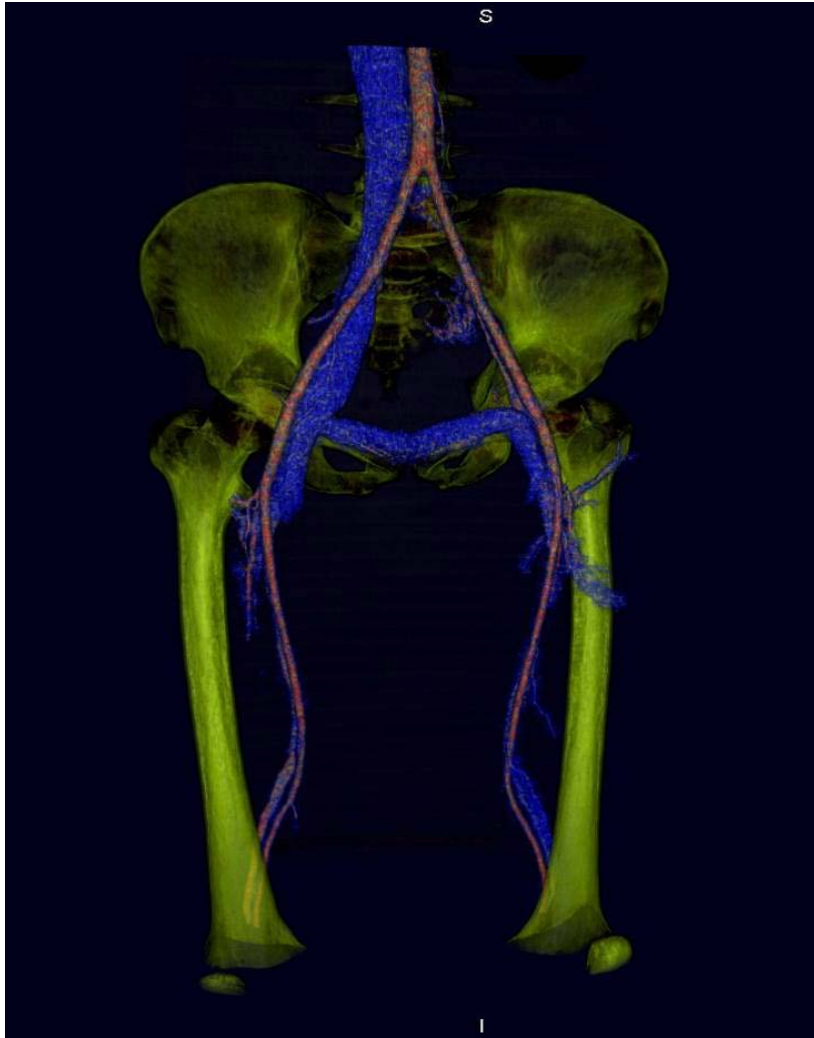
Knee perforator vein



Posterolateral thigh perforator vein

Venous malformations

- ▶ Varicose veins present at birth or puberty
 - ▶ Associated port wine stain, lymphatic malformation
 - ▶ Unusual anatomy – lateral saphenous vein, absent deep vein portions, refluxing tributaries into muscles
 - ▶ Consider MRA to determine extent and determine low vs. high flow
 - ▶ Consider Vascular Malformation Team
- 



Courtesy C Shortell

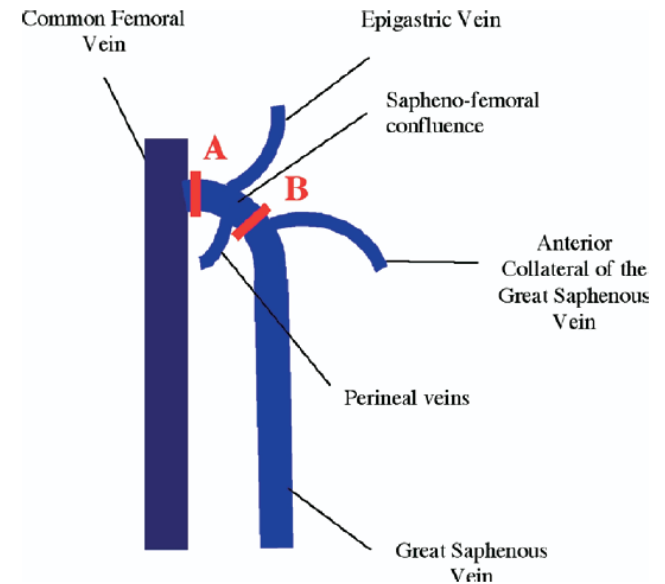


Markovic & Shortell, Low Flow Vascular Malformations, in EML et al. (eds), *Phlebology, Vein Surgery & Ultrasonography*, 2014

Recurrent varicose veins after surgery

- ▶ N = 199 limbs
- ▶ 14 institutions, 8 countries
- ▶ SFJ, 47%
- ▶ SPJ, 25%
- ▶ Pelvic or abdominal, 17%
- ▶ IPV, 55%
- ▶ Deep veins, 27%

Perrin, JVS 2006



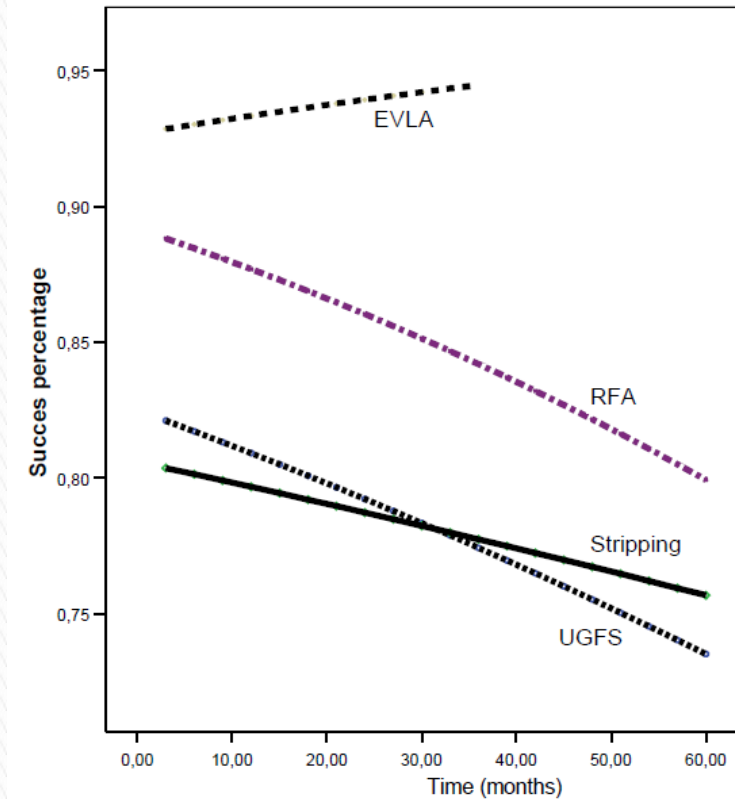
Pittaluga ,JVS 2008



Neovascularization, van Rij, JVS 2004

Recurrent varicose veins

- ▶ Recanalization of treated veins
- ▶ Abdominopelvic reflux
- ▶ Incompetent perforator veins
- ▶ Varicose veins without escape point



Van den Bos, meta-analysis, JVS 2009

Conclusions

- ▶ Know CEAP
 - ▶ Know definitions of key vein signs
 - ▶ Non-saphenous vein reflux
 - ▶ Venous malformations
 - ▶ Recurrent varicose veins
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