

Varicose veins surgery in case of open ulcers

International school of
venous surgery

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Frequency of superficial venous insufficiency in ulcers

		SVI alone	SVI mixte
WRIGHT 1988	300	97%	
HANRAHAN 1991	95	17%	50%
NELZEN 1991	332	47%	41%
DARKE 1992	232	39%	
SHAMI 1993	79	53%	32%

		SVI alone	SVI mixte
Van RIJ 1994	120	40%	33%
LABROPOULOS 1995	112	23%	61%
BERGAN 1997	58	17%	29%
SCRIVEN 1997	95	57%	32%
YAMAKI 1998	164	39%	85%

1492 ulcers

**78% SVI
with other
types**

**37% SVI
unique cause**

Insufficiency of the GSV is more frequently involved in ulcers than SSV

	GSV	SSV	GSV + SSV
255 SVI without ulcer	48%	33%	19%
94 SVI with ulcer	61%	8%	30%

$p < 0.001$

$p < 0.001$

Length of incompetence of the GSV and ulcers

$p < 0.001$

	CRETON	LABROPOULOS	HANRAHAN	YAMAKI
	n=274	n=86	n=73	n=164
short	200	9	6	82
long	74	77	67	80
	Normal	Ulcer	Ulcer	Ulcer

Long incompetence of the GSV (groin-ankle) is more significantly associated with ulcers than short incompetence (groin-bellow knee)

No Ulcer

**Insufficiency
from groin to
ankle**

10%



Ulcer

**Insufficiency
from groin to
ankle**

70%



The reflux seems to be quantitatively larger...



4 times fewer
leaflets

$p < .05$

No ulcer

Ulcer

Ulcers are in relation with the severity of chronic venous disease

All types of venous insufficiency add their own reflux to increase the risk of ulcer

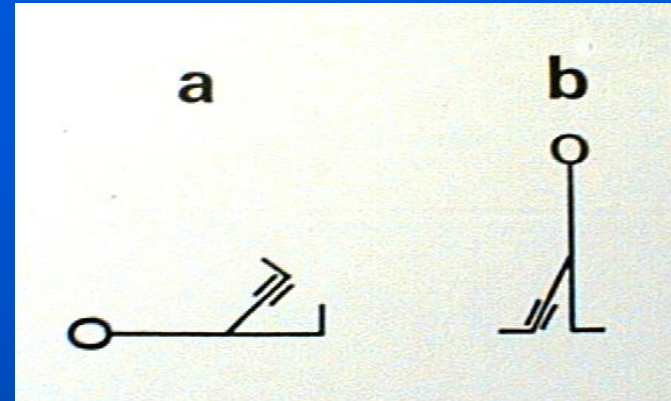
Long reflux of the GSV is more dangerous than short reflux on GSV	the SVS
Insufficiency of the GSV	GSV or SSV only
Insufficiency of both GSV/SSV	GSV only
Insufficiency of GSV+Perforators	GSV+Perforators
Insufficiency of GSV+Perforators+DVI	

How quantify the venous reflux ?

APG, Foot Venous Pressure

APG

Leg volume measurement

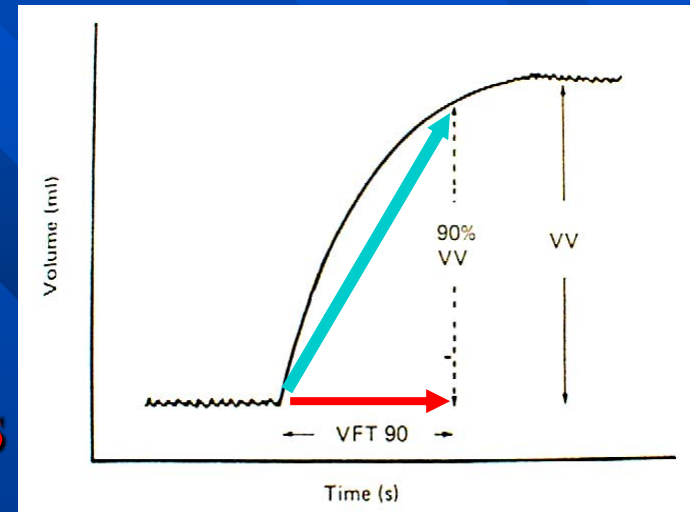


VFI

Venous Filling Index

VFT90

Venous filling time 90 s



Speed of re-filling the leg after standing up from the horizontal position

Foot venous pressure measurement

Heel-raising tip-toe exercise

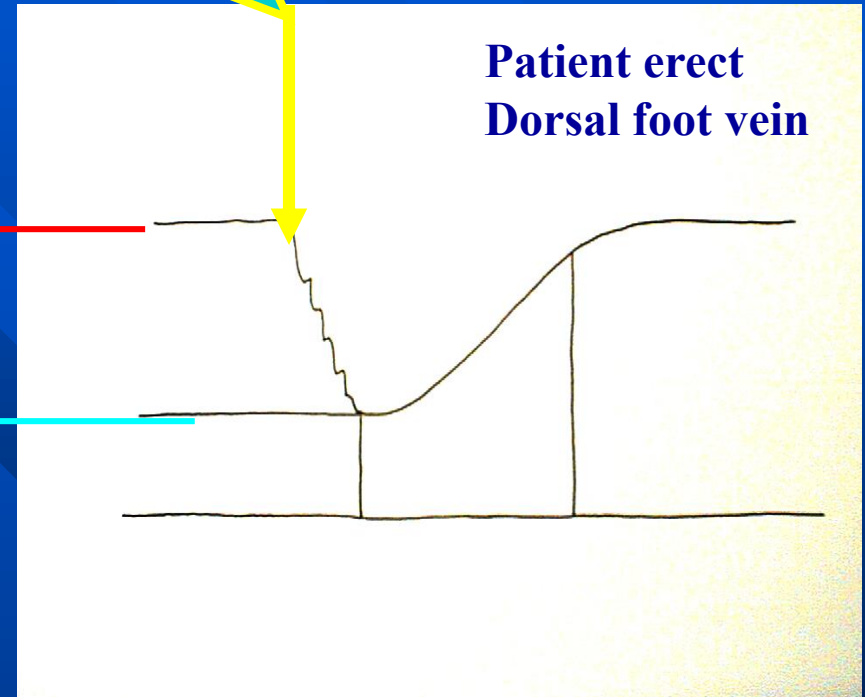
Resting
Venous
Pressure

RVP

Ambulatory
Venous
Pressure

AVP

Patient erect
Dorsal foot vein



Measurement of RVP/AVP is one established quantitative means of testing the calf pump

Quantification of the reflux

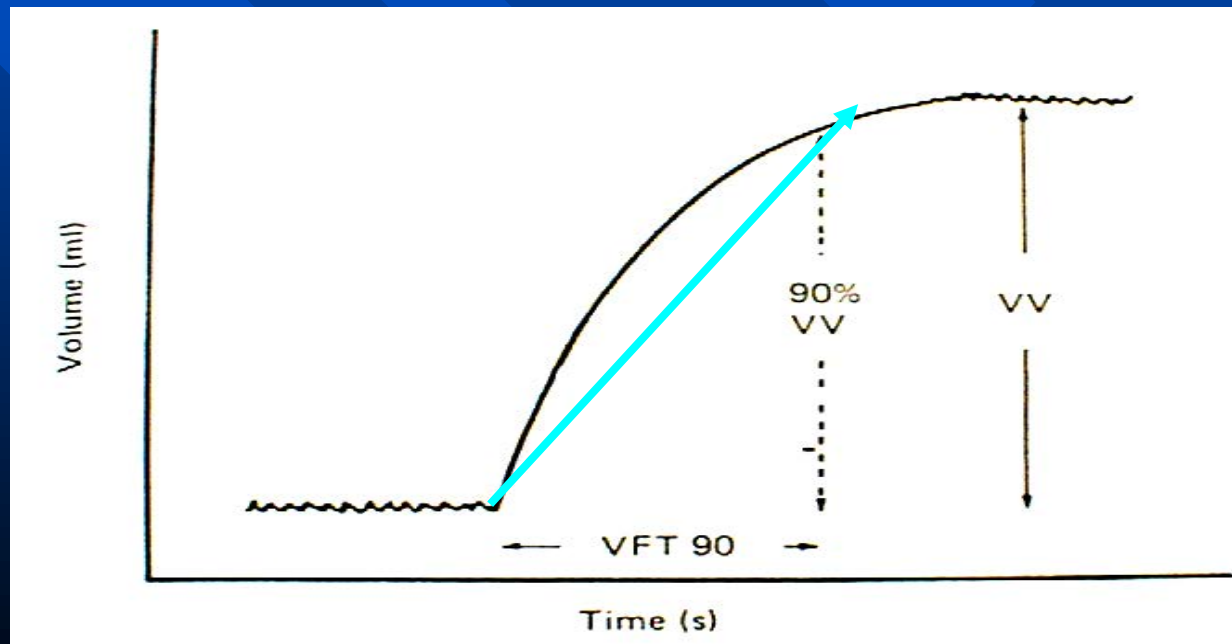
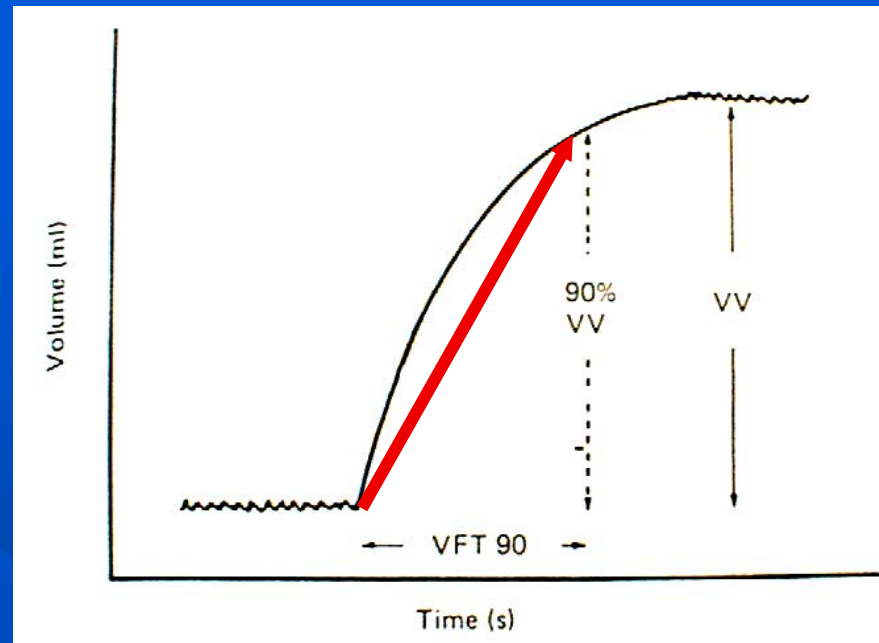
VFI > 2 ml/s 90% [1]

VFI > 5 < -10 ml/s 45% [1]

VFI > 10 ml/s 60% [2]

1/CHRISTOPOULOS D,et al. *Br J Surg* 1988 ;75 :352- 6

2/ VAN RIJ AM,et al. *J Vasc Surg* 1994;20:759-64



**Normal VFI
1-2 ml/s**

Quantification of the reflux

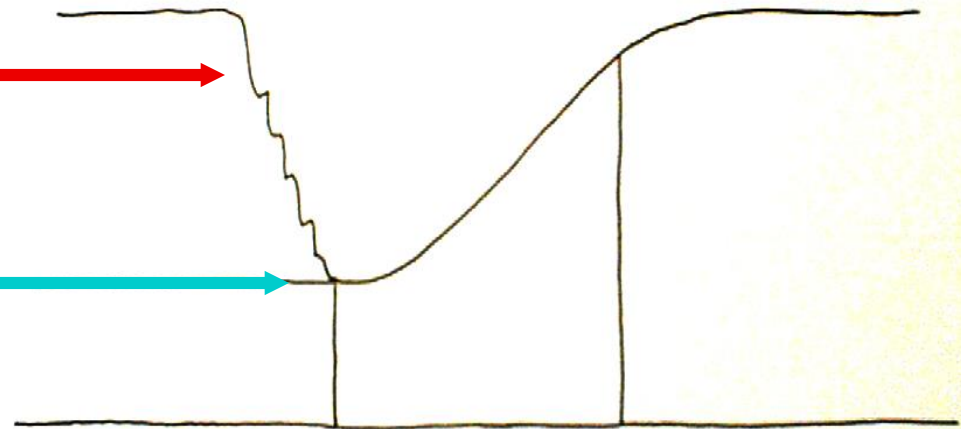
Heel-raising tip-toe exercise

AVP = 51 mmHg [1]

AVP \cong 80 mmHg [2]

AVP = 80 mmHg [3]

Normal AVP = 20 mmHg



1/ HOARE MC, et al. *Surgery* 1982;92:450-452

2/ SETHIA KK, et al. *Br J Surg* 1984;71:754-755

3/ AKESSON H, et al. *Phlebology* 1990;5:113-123

Compression therapy is always mandatory (several months) :



No elastic stocking :
insufficient compression,
dressing not easy



Bandage

Elastic stocking will be worn afterwards
(stabilisation of the disease)

General treatment →

Antibiotic, medicine are unnecessary

Wound dressing →

Local drugs, topical agents
(Zinc, Hydrocolloid dressing)
Ointments, creams if not allergenic

How to perform a preoperative dressing bandage ?

- 1/ First wound dressing
- 2/ Non-adhesive dressing
- 3/ Layer of absorbent cotton wool
- 4/ Layer of standard crepe bandage
- 5/ Layer of cohesive bandage applied in a « figure of 8 » configuration

Bandages

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graph TD; A[Bandages] --> B[1 Non elastic compression + Walking Gel paste gauze boots (Unna)]; A --> C[2 Elastic bandage 40 mmHg];
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1 Non elastic compression + Walking
Gel paste gauze boots (Unna)

2 Elastic bandage 40 mmHg



**Cohesive non-elastic bandage applied
in a « figure of 8 » configuration**



**Elastic bandage applied
in a « figure of 8 » configuration**

20 to 40 mmHg

Surgery of the GSV in case of ulcers

Long stripping of the GSV = 70%

Be carefull :

Infectious risk

Neurologic complication is major (long stripping, calf)

Neurologic complication is increased because of the fibrosis [1]

But :

Low incision is always under the ulcerations

Straight stripper, Pin-stripper easier to direct

Invagination is often easy (strong and thick trunk)

Closure®, Laser is a good alternative

Surgery of the GSV in case of ulcers

1/ Compression / healing / normal surgery

1 small ulcer

2/ Compression / normal surgery

**No
healing**

Large ulcer



3/ Compression / above knee surgery / healing / re-surgery

**No
healing
possible**

**Large, numerous ulcers
Painful ulcers
Major lipodermatosclerosis**



After cicatrisation of the ulcer do not wait a long time before the operation :

Beware of the recurrences !

Never forget the compression !

Skin graft at the end of the sequential treatment



Rarely !



Results :

90 % 100% healing

Isolated SVI + ulcer

- Flush ligation GSV 100% < 1mois [1]
- Stripping GSV 84% < 3-4 mois [2]
- Stripping GSV 95% < 3-4 mois [3]

1/ SCRIVEN JM, *Br J Surg* 1998;85:781-4

2/ WRIGHT DDI, *J Cardiovasc Surg* 1987;28:5-99

3/ ETIENNE G, *J Mal Vasc* 1995;20:45-7

Results :

90 % healing

SVI + Perforators

49 ulcers

Stripping only

Healing : 91%

3.5 years

12 ulcers

Stripping only

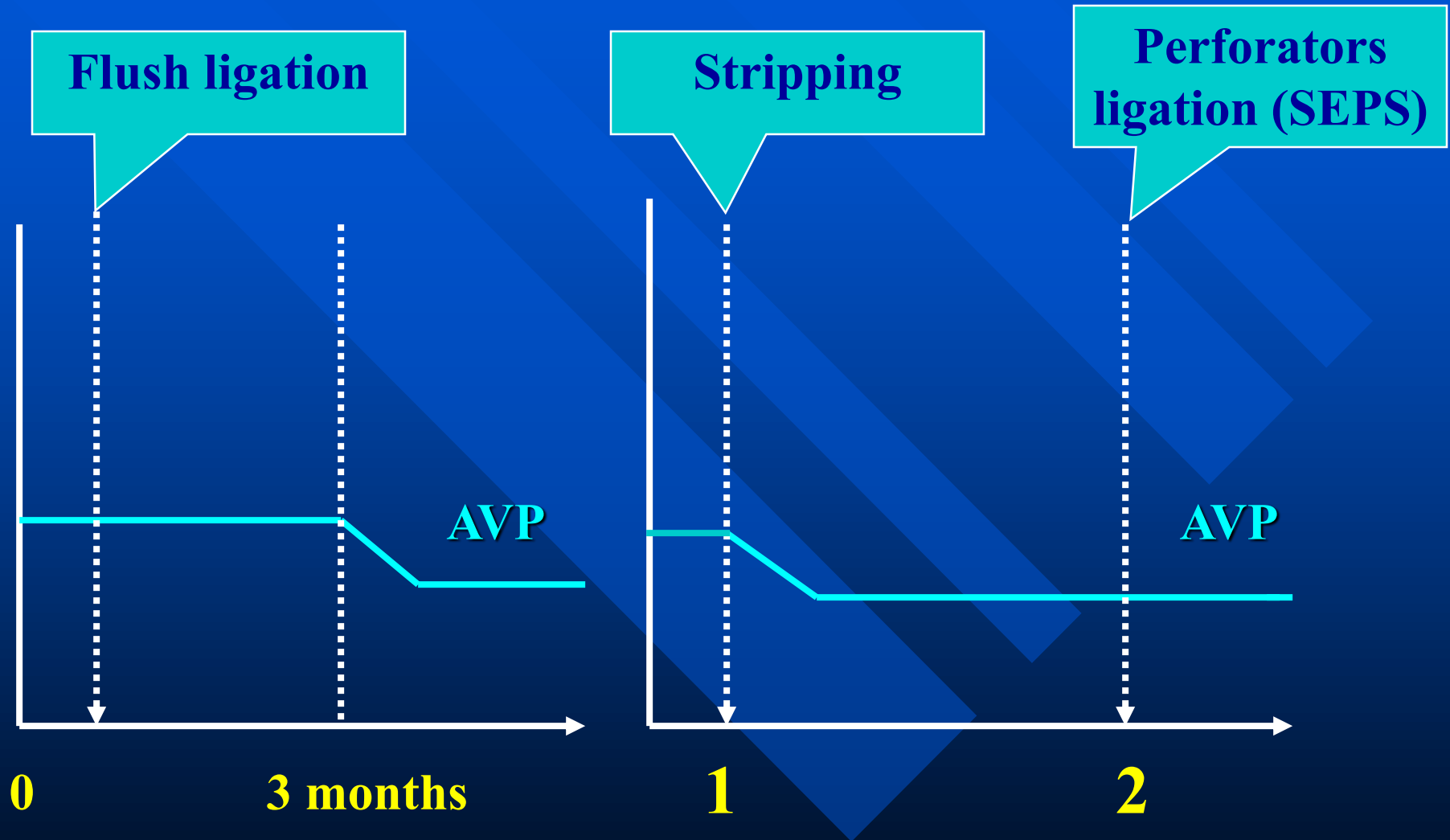
AVP :

13% → 31%

DARKE SG, PENFOLD C.
Eur J Vasc Surg 1992;6:4-9

SETHIA KK, DARKE SG.
Br J Surg 1984;71:754-755

Arguments supporting the reason for operated on « GSV and perforators » at different times (3 months)



SCRIVEN JM, et al.
Br J Surg 1998;85:781-784

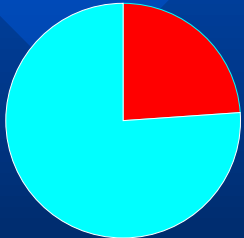
AKESSON H, et al.
Phlebology 1990;5:113-123

Results :

70 % healing

SVI + Perforators +DVI

**Stripping +
Perforators [1]
healing : 100%**

**Stripping +
Perforators [2]** 
3.5 ans
76% time without ulcer

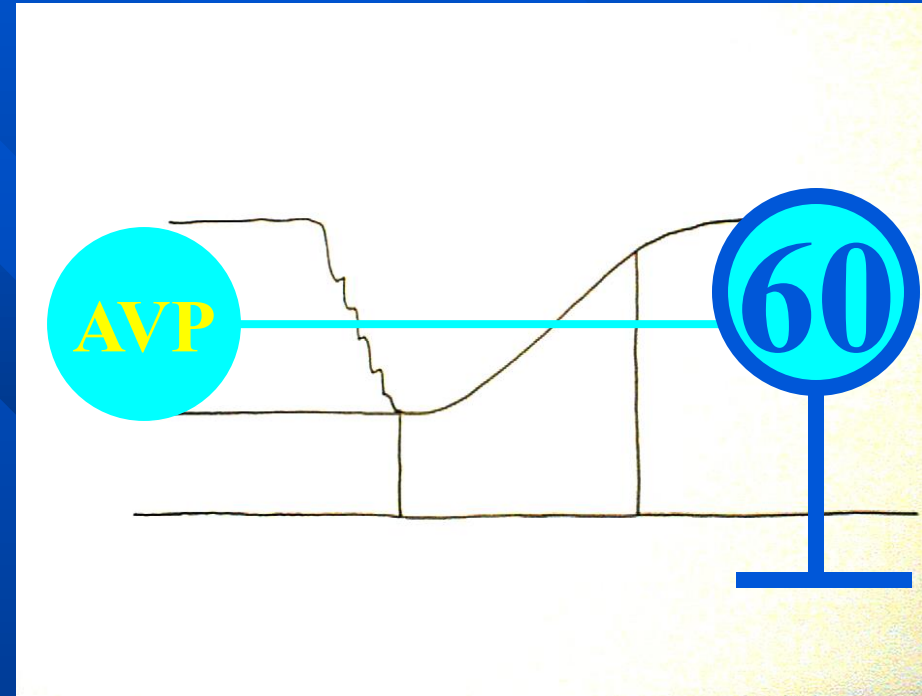
1/ PRADBERG FT, et al.
J Vasc Surg 1996;24:711-8

2/ AKESSON H.
Phlebology 1993;8:128-131

Results

Good calf pump function and compression are fundamental to maintain the result

$AVP < 60 \text{ mmHg}$



Predictive value of long ulcer free period

Conclusions

- 1. High compression is always mandatory BEFORE and after.**
- 2. Stripping the GSV only is always very effective.**
- 3. In cases of association GSV/Perforators : do the GSV and wait 3 months to re-evaluate the function of the perforators before SEPS**