EUROPEAN SOCIETY FOR VASCULAR SURGERY (ESVS) 2022 CLINICAL PRACTICE GUIDELINES ON THE MANAGEMENT OF CHRONIC VENOUS DISEASE OF THE LOWER LIMBS

GUIDELINE WRITING COMMITTEE MEMBERS

MARIANNE G. DE MAESENEER (CHAIR)*, STAVROS K. KAKKOS (CO-CHAIR), THOMAS AHERNE, NIELS BAEKGAARD, STEPHEN BLACK, LENA BLOMGREN, ATHANASIOS GIANNOUKAS, MANJIT GOHEL, RICK DE GRAAF, CLAUDINE HAMEL-DESNOS, ARKADIUSZ JAWIEN, ALEKSANDRA JAWORUCKA- KACZOROWSKA, CHRISTOPHER LATTIMER, GIOVANNI MOSTI, THOMAS NOPPENEY, MARIE JOSEE VAN RIJN, GERRY STANSBY

GUIDELINE REVIEWERS

PHILIPPE KOLH (REVIEW COORDINATOR), FREDERICO BASTOS GONÇALVES, MARTIN BJÖRCK, NABIL CHAKFE, RAPHAEL COSCAS, NUNO V. DIAS, ROBERT J. HINCHLIFFE, IGOR BOSKO KONCAR, JES S. LINDHOLT, SANTI TRIMARCHI, RIIKKA TULAMO, CHRISTOPHER P. TWINE, FRANK EG. VERMASSEN, ANDERS WANHAINEN, GERT J. DE BORST, NICOS LABROPOULOS, FEDOR LURIE, ARMANDO MANSILHA, ISAAC K. NYAMEKYE, MARTA RAMIREZ ORTEGA, JORGE H. ULLOA, TOMASZ URBANEK, ANDRE M. VAN RIJ, MARC E. VUYLSTEKE.

WHAT IS NEW IN THE 2022 GUIDELINES? (1)

- Global structure:
  - More practical and user friendly
  - Focus on management strategy – including flowcharts
- Entire chapter on patients with superficial venous incompetence:
  - Non-thermal ablation
  - Perforating veins
  - Special anatomical considerations
  - Recurrent varicose veins *(no separate chapter anymore)*
- Separate chapter on patients with deep vein pathology:
  - Focus on iliac outflow obstruction
  - Combination of superficial and deep venous problems
  - Deep vein aneurysm
  - Popliteal vein entrapment

WHAT IS NEW IN THE 2022 GUIDELINES? (2)

- Chapter on patients with venous leg ulceration:
  - Focus on early intervention for superficial vein incompetence
  - Treatment of underlying deep venous pathology
- Chapter on the management of patients with varicose veins, related to underlying pelvic venous disorders.
- Chapter about special patient characteristics and their potential influence on management strategy
- Gaps in evidence and future perspectives
- Information for patients (lay summary)

LEVEL OF EVIDENCE

Level of evidence A	Data derived from multiple randomized clinical trials or meta-analyses.
Level of evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.
Level of evidence C	Consensus of opinion of the experts and/or small studies, retrospective studies, registries.

CLASSES OF RECOMMENDATION

Classes of recommendations	Definition	Suggested wording to use
Class I	Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.	Is recommended.
Class II	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.	
Class IIa	*Weight of evidence/opinion is in favour of usefulness/efficacy.*	Should be considered.
Class IIb	*Usefulness/efficacy is less well established by evidence/opinion.*	May be considered.
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.	Is not recommended.

HISTORY TAKING IN PATIENTS WITH SUSPECTED CVD

- General medical history – previous interventions, pregnancies etc.
- History of venous thromboembolism, including superficial vein thrombosis (SVT); history of VV bleeding
- Venous symptoms of the lower limbs (LLs):
  - Heaviness
  - Tired legs / fatigue
  - Feeling of swelling
  - Itching
  - Nocturnal cramps
  - Throbbing
  - Aching / Burning pain
  - Venous claudication: increasing pain on exercise
- Symptoms related to pelvic venous disorders:
  - Chronic pelvic pain
  - Dyspareunia

CLINICAL EXAMINATION IN PATIENTS WITH CVD

Clinical class*	Description
C0	No visible or palpable signs of CVD
C1	Telangiectasias or reticular veins
C2	Varicose veins
C2r	Recurrent varicose veins
C3	Oedema
C4	Changes in skin and subcutaneous tissue
C4a	Pigmentation or eczema
C4b	Lipodermatosclerosis or atrophie blanche
C4c	Corona phlebectatica
C5	Healed ulcer
C6	Active venous ulcer
C6r	Recurrent venous ulcer








* According to the updated CEAP classification, *Lurie et al. JVS VLD 2020*

SCORING SYSTEM: REVISED VENOUS CLINICAL SEVERITY SCORE

Variable	Description (score)			
	Absent (0)	Mild (1)	Moderate (2)	Severe (3)
Pain* or ulcer discomfort	None	Occasional	Daily, interfering with, but not preventing regular activities	Daily, limiting most regular activities
Varicose veins	None	Few, scattered or corona phlebectatica	Confined to calf or thigh	Involve calf and thigh
Venous oedema	None	Limited to foot or ankle	Extends above ankle but below knee	Extends to knee or above
Skin pigmentation	None or focal	Limited to perimalleolar area	Diffuse over lower third of calf	Wider distribution, above lower third of calf
Inflammation	None	Limited to perimalleolar area	Diffuse over lower third of calf	Wider distribution, above lower third of calf
Induration	None	Limited to perimalleolar area	Involving lower third of calf	Involving more than lower third of calf
Number of active ulcers	None	1	2	>2
Active ulcer duration	None	<3-months	>3-months but <1-year	>1-year
Active ulcer size	None	Diameter <2 cm	Diameter 2 – 6 cm	Diameter >6 cm
Compression therapy	Not used	Intermittent use of stocking	Stocking use most days	Full compliance with stockings

* Ache, heaviness, fatigue, soreness and burning presumptive of a venous origin

SCORING SYSTEM FOR POST-THROMBOTIC SYNDROME: VILLALTA SCORE

Clinical Findings*	None	Mild	Moderate	Severe
Symptoms				
Pain	0	1	2	3
Cramping	0	1	2	3
Heaviness	0	1	2	3
Pruritis	0	1	2	3
Paraesthesia	0	1	2	3
Signs				
Oedema	0	1	2	3
Induration	0	1	2	3
Hyperpigmentation	0	1	2	3
Venous ectasia	0	1	2	3
Redness	0	1	2	3
Calf tenderness	0	1	2	3
Interpretation of severity of post thrombotic syndrome				
Villalta score	<5	5-9	10-14	>14 or presence of venous ulceration

* Each variable is given a score of between 0 and 3 indicative of a severity of none, mild moderate or severe respectively with a maximum score of 33. PTS: post-thrombotic syndrome

PATIENT-REPORTED OUTCOME MEASURES (PROMs)

- Disease-specific
  - AVVQ: Aberdeen varicose veins questionnaire
  - CIVIQ: Chronic Venous Insufficiency Questionnaire
  - VEINES QOL/Sym: Venous Insufficiency Epidemiological and Economic Study quality of life/symptoms
- Generic
  - EQ-5D
  - SF-36

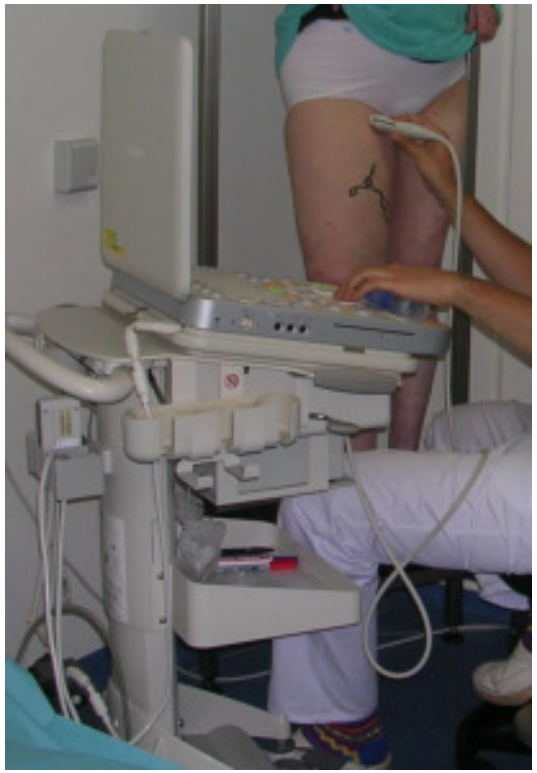
CLASSIFICATION AND SCORING SYSTEMS

Recommendation	Class	Level
For patients with chronic venous disease, the use of the Clinical, Etiological, Anatomical, Pathophysiological (CEAP) classification is recommended for clinical audit and research.	I	C
For patients with chronic venous disease, grading of clinical severity and evaluation of treatment success using the revised Venous Clinical Severity Score (r-VCSS) and the Villalta scale for post-thrombotic syndrome, should be considered for clinical audit and research.	IIa	C

INVESTIGATIONS IN PATIENTS WITH SUSPECTED CVD

DUPLEX ULTRASOUND OF THE LLs

- The primary diagnostic test in patients with suspected CVD
- Haemodynamic evaluation: presence or absence of reflux?
  - Cut-off values of reversed flow duration:
    - > 1 s for femoral vein, popliteal vein
    - > 0,5 s for superficial veins
- Morphological evaluation
  - Diameter measurement
  - Post-thrombotic changes
- Venous duplex mapping



ABDOMINAL DUPLEX ULTRASOUND

- Additional investigation if supra-inguinal pathology is suspected, based on:
  - History: previous extensive DVT, VTE
  - Clinical findings: C3 – C6, abdominal wall collaterals
  - Duplex ultrasound findings: absence of phasic flow in common femoral vein, post-thrombotic fibrosis
- Obstruction:
  - Compression of common iliac vein by common iliac artery
  - Post-thrombotic fibrosis
  - Occlusion
  - Collateral circulation

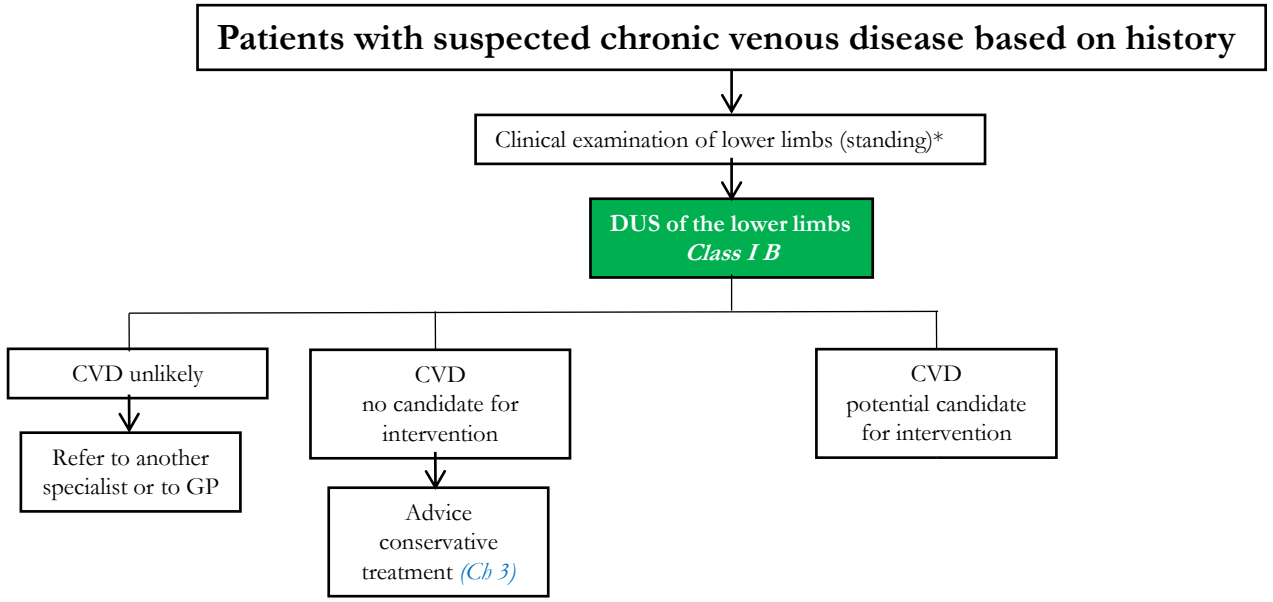
DUPLEX ULTRASOUND

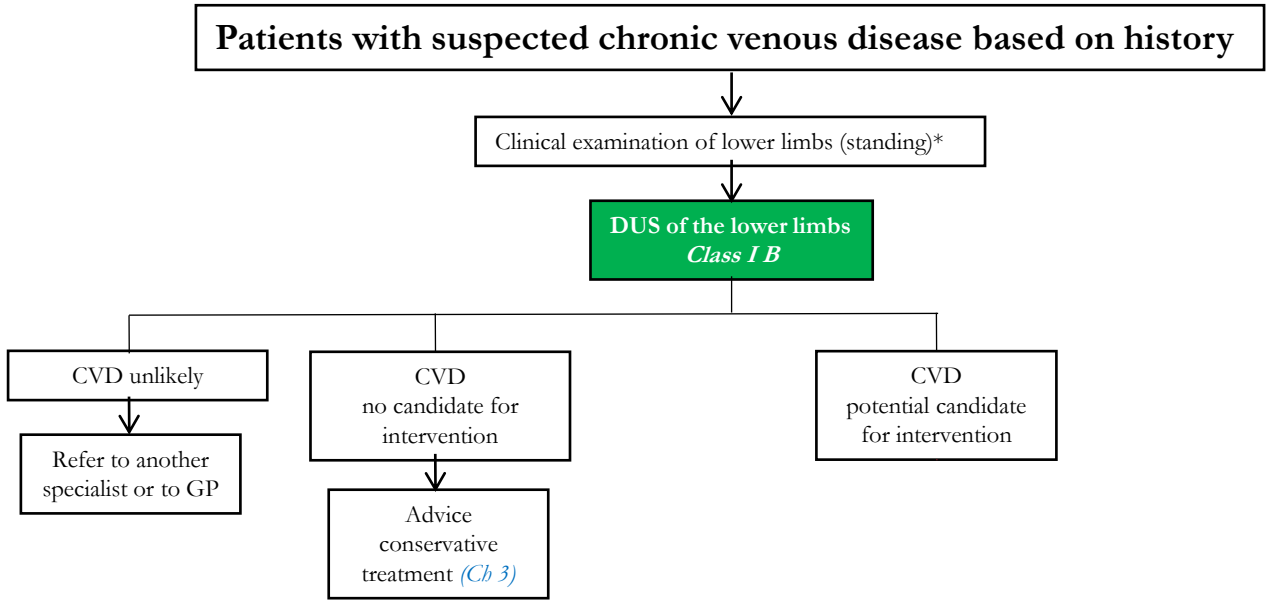
Recommendation	Class	Level
For diagnosis and treatment planning in patients with suspected or clinically evident chronic venous disease, full lower limb venous duplex ultrasound is recommended as the primary imaging modality.	I	B
For patients with suspected supra-inguinal venous obstruction, in addition to full leg duplex assessment, ultrasound of the abdominal and pelvic veins should be considered, as part of the initial assessment.	IIa	C

OTHER INVESTIGATIONS

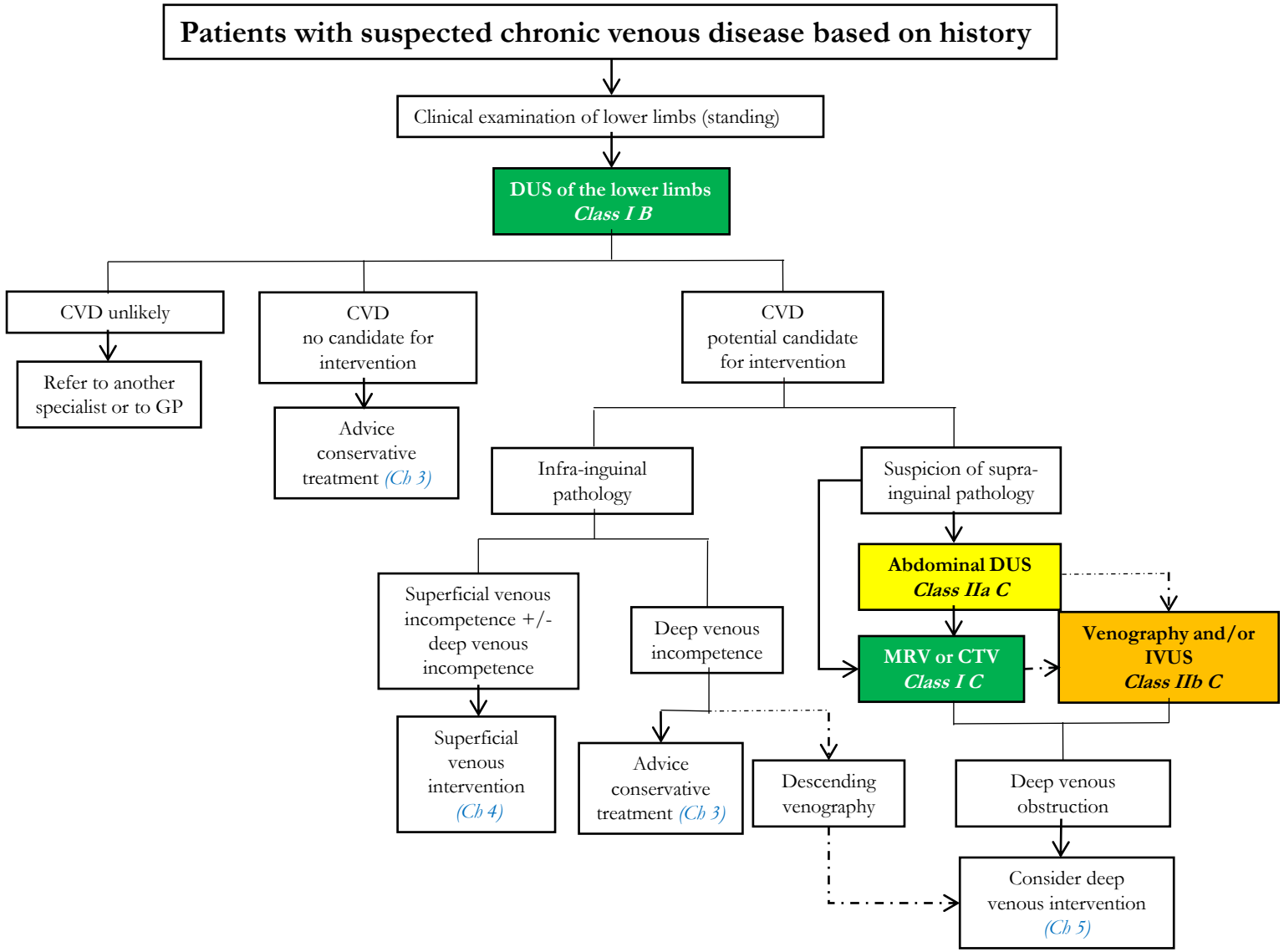
Recommendation	Class	Level
When an intervention is contemplated in patients with suspected supra-inguinal venous obstruction, cross-sectional imaging by magnetic resonance venography or computed tomography is recommended in addition to duplex ultrasound assessment.	I	C
For selected patients with suspected supra-inguinal venous obstruction, where cross-sectional diagnostic imaging is inadequate or not available, venography and/or intravascular ultrasound may be considered.	IIb	B
For patients with chronic venous disease, air plethysmography may be considered for quantification of reflux and/or obstruction, in particular when duplex ultrasound results do not reconcile with the clinical findings.	IIb	C

DIAGNOSTIC STRATEGY


Patients with suspected chronic venous disease based on history
Clinical examination of lower limbs (standing)*
DUS of the lower limbs
Class I B
CVD unlikely
Refer to another specialist or to GP
CVD no candidate for intervention
Advice conservative treatment (Ch 3)
CVD potential candidate for intervention

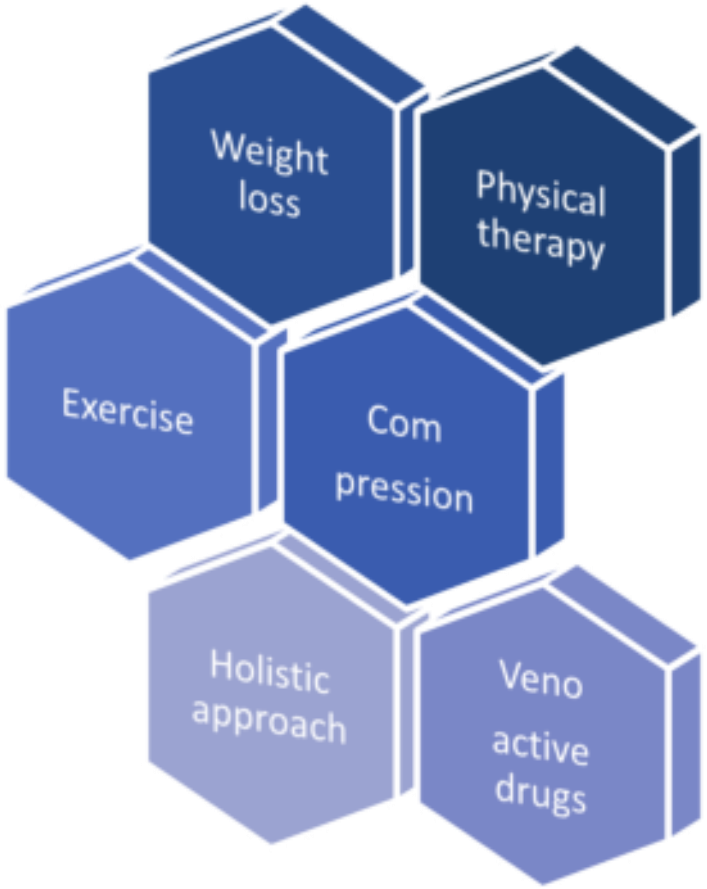


* Includes inspection of abdomen for potential collaterals


Patients with suspected chronic venous disease based on history
Clinical examination of lower limbs (standing)
DUS of the lower limbs
Class I B
CVD unlikely
Refer to another specialist or to GP
CVD no candidate for intervention
Advice conservative treatment (Ch 3)
CVD potential candidate for intervention
Infra-inguinal pathology
Superficial venous incompetence +/- deep venous incompetence
Superficial venous intervention (Ch 4)
Deep venous incompetence
Advice conservative treatment (Ch 3)
Descending venography
Suspicion of supra-inguinal pathology
Abdominal DUS
Class IIa C
MRV or CTV
Class I C
Venography and/or IVUS
Class IIb C
Deep venous obstruction
Consider deep venous intervention (Ch 5)

CONSERVATIVE TREATMENT FOR PATIENTS WITH CVD

CONSERVATIVE TREATMENT



PHYSICAL THERAPY

Recommendation	Class	Level
For patients with chronic venous disease, exercise should be considered to reduce venous symptoms.	IIa	B

COMPRESSION

- Different modalities
  - Elastic compression stockings (ECS) – usually graduated
  - Inelastic bandages (IB)
  - Adjustable compression garments (ACG)
  - Intermittent pneumatic compression (IPC)
- Most frequently used: knee length compression
- Effective for reducing venous symptoms, oedema and lipodermatosclerosis/atrophie blanche
- Compliance may be an issue – donning and doffing aids can be useful
- Caution in case of concomitant arterial disease:

CONTRAINDICATIONS FOR COMPRESSION TREATMENT

Contraindications
Severe lower extremity atherosclerotic disease with ABI < 0.6 and/or ankle pressure <60 mmHg
Extra-anatomical or superficially tunnelled arterial bypass at the site of intended compression
Severe heart failure, NYHA Class IV
Heart failure NYHA Class III and routine application of compression devices without clinical and haemodynamic monitoring
Confirmed allergy to compression material
Severe diabetic neuropathy with sensory loss or microangiopathy with the risk of skin necrosis*

ABI = Ankle-brachial index; NYHA= New York Heart Association classification, where NYHA Class IV: fatigue, palpitations, dyspnoe and/or angina at rest, and Class NYHA III: ordinary physical activity causes undue fatigue, palpitations, dyspnoe and/or angina - comfortable at rest.

*May not apply to inelastic compression exerting low levels of sustained compression pressure (modified compression)

COMPRESSION

Recommendation	Class	Level
For patients with symptomatic chronic venous disease, elastic compression stockings, exerting a pressure of at least 15 mmHg at the ankle, are recommended to reduce venous symptoms.	I	B
For patients with chronic venous disease and oedema (CEAP clinical class C3), compression treatment, using below knee elastic compression stockings, inelastic bandages or adjustable compression garments, exerting a pressure of 20-40 mmHg at the ankle, is recommended to reduce oedema.	I	B
For patients with chronic venous disease and lipodermatosclerosis and/or atrophie blanche (CEAP clinical class C3), using below knee elastic compression stockings, exerting a pressure of 20-40 mmHg at the ankle, is recommended to reduce skin induration.	I	B

COMPRESSION IN POST-THROMBOTIC SYNDROME

Recommendation	Class	Level
For patients with post-thrombotic syndrome, below knee elastic compression stockings, exerting a pressure of 20-40 mmHg at the ankle, should be considered to reduce severity.	IIa	B
For patients with post-thrombotic syndrome, adjuvant intermittent pneumatic compression may be considered to reduce its severity.	IIb	B

PHARMACOLOGICAL TREATMENT

- Venoactive drugs (VADs) decrease capillary permeability, reduce release of inflammatory mediators or reduce venous tone
- Different effectiveness in reducing venous symptoms and oedema for different VADs :

Symptom or sign	Ruscus extracts	MPFF	Calcium dobesilate	Horse chestnut extract	Hydroxyethyl-rutosides	Red vine leaf extract	Sulodexide
Pain	+	+	+	+	+	+	
Heaviness	+	+	+		+		+
Fatigue	+		+				+
Feeling of swelling	+	+					
Cramps	+	+	+		+		+
Paresthesia	+	+	+				
Pruritus			+	+			
Oedema	+	+	+	+		+	

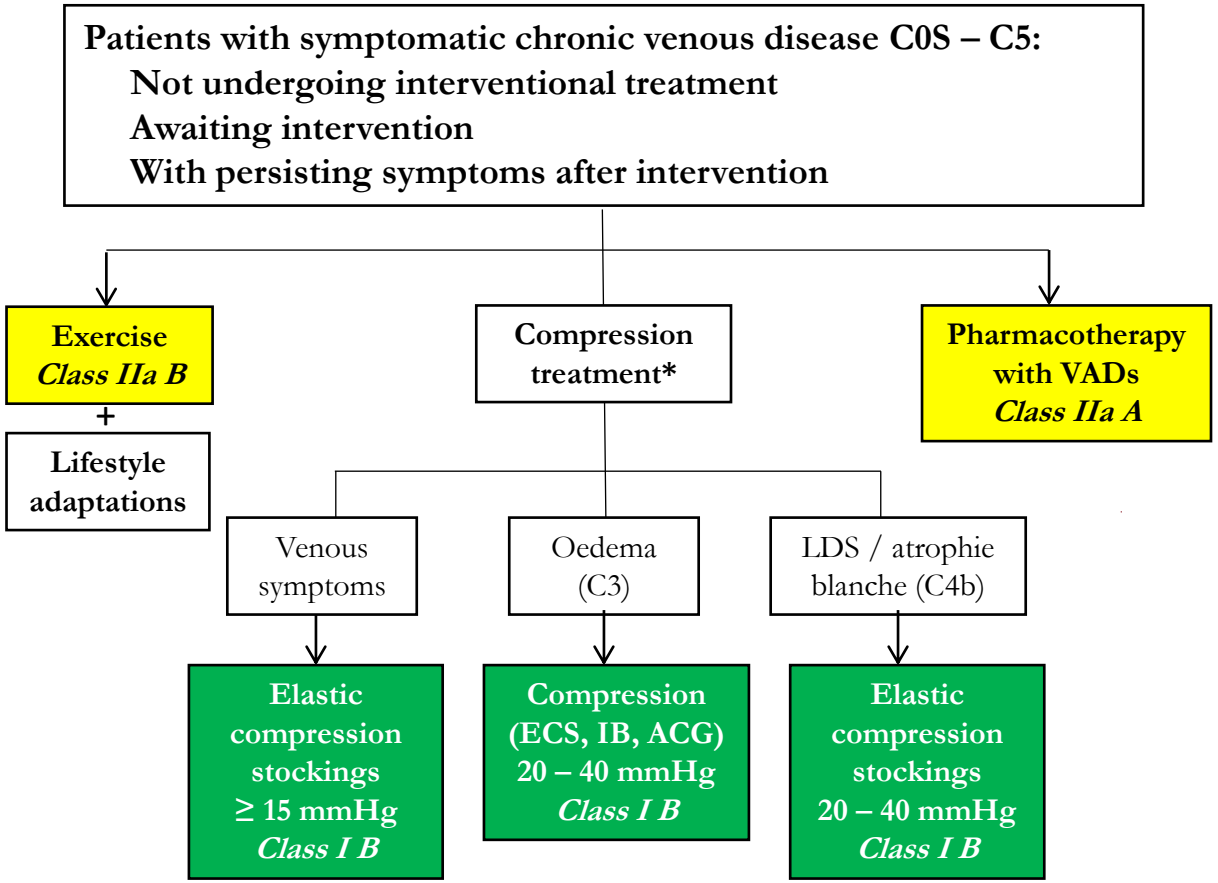
MPFF: micronised purified flavonoid fraction

PHARMACOLOGICAL TREATMENT

Recommendation	Class	Level
In patients with symptomatic chronic venous disease, who are not undergoing interventional treatment, are awaiting intervention or have persisting symptoms and/or oedema after intervention, medical treatment with venoactive drugs should be considered to reduce venous symptoms and oedema, based on the available evidence for each individual drug.	IIa	A

CONSERVATIVE MANAGEMENT STRATEGY

CONSERVATIVE MANAGEMENT STRATEGY



INTERVENTIONS FOR SUPERFICIAL VENOUS INCOMPETENCE

INDICATIONS FOR TREATMENT OF SUPERFICIAL VEINS IN CVD PATIENTS

Recommendation	Class	Level
For patients with superficial venous incompetence presenting with symptomatic varicose veins (CEAP clinical class C2s), interventional treatment is recommended.	I	B
For patients with superficial venous incompetence, presenting with oedema (CEAP clinical class C3), other non-venous causes of oedema should be considered before planning interventional treatment.	IIa	C
For patients with superficial venous incompetence, presenting with skin changes due to chronic venous disease (CEAP clinical class C4 – C6), interventional treatment of venous incompetence is recommended.	I	C

→ Further specific recommendations about treatment techniques are mentioning:

e.g. 'For patients with great saphenous vein incompetence requiring treatment …'

TREATMENT IN THE OUTPATIENT SETTING

Recommendation	Class	Level
For patients with superficial venous incompetence, undergoing treatment using endovenous techniques with or without phlebectomies, the procedures should be performed in the outpatient setting where possible.	I	C

THE USE OF TUMESCENT ANESTHESIA

Recommendation	Class	Level
For patients with superficial venous incompetence treated by endovenous thermal ablation, ultrasound-guided tumescent anaesthesia is recommended.	I	C
For patients with superficial venous incompetence treated under tumescent anaesthesia, buffered solutions should be considered to reduce periprocedural pain.	IIa	B
For patients with superficial venous incompetence undergoing high ligation/stripping, ultrasound guided tumescent anaesthesia may be considered, as an alternative to general or regional anesthaesia.	IIb	C

COMPRESSION AFTER TREATMENT

- Postprocedural compression is controversial, even if the vast majority of practitioners still use it in their daily practice
- To effectively compress the above knee GSV, eccentric compression is needed with a compression pad on top of the GSV
- Several RCTs on postinterventional compression – conflicting evidence!
- Duration of compression? equally controversial

COMPRESSION AFTER TREATMENT

Recommendation	Class	Level
For patients with superficial venous incompetence undergoing ultrasound-guided foam sclerotherapy or endovenous thermal ablation of a saphenous trunk, postprocedural compression treatment should be considered.	IIa	A
For patients with superficial venous incompetence undergoing stripping and/or extensive phlebectomies, immediate postprocedural compression treatment is recommended.	I	A
For patients with superficial venous incompetence undergoing intervention, the duration of post-intervention compression, used to minimize postoperative local complications, should be decided on an individual basis.	I	A

THROMBOPROPHYLAXIS

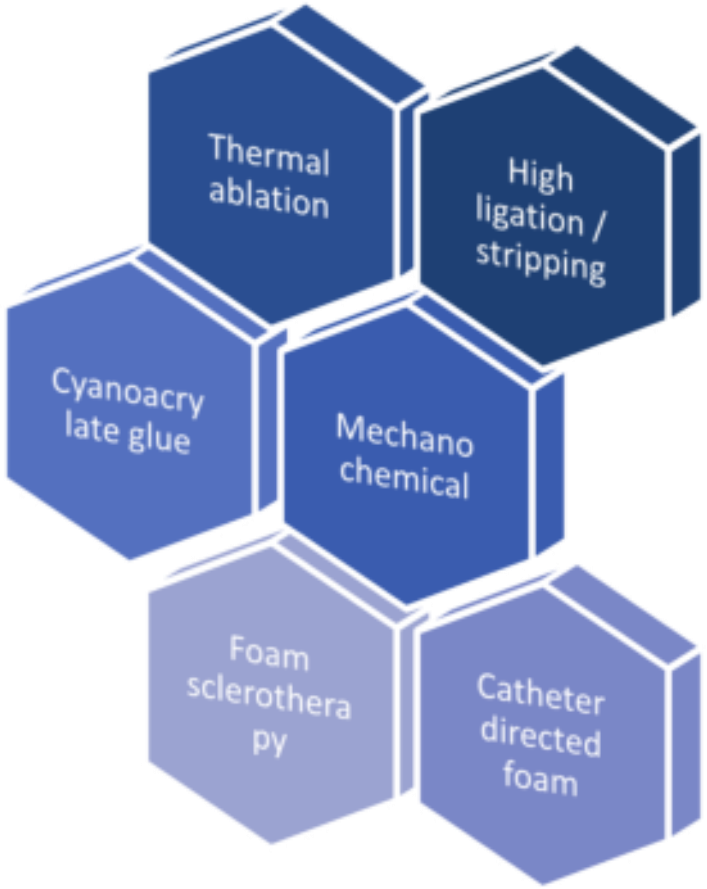
Recommendation	Class	Level
For patients with superficial venous incompetence undergoing intervention, risk assessment for venous thromboembolism is recommended.	I	C
For patients with superficial venous incompetence undergoing intervention, individualised thromboprophylaxis strategies should be considered.	IIa	B

SURVEILLANCE AFTER TREATMENT

Recommendation	Class	Level
For patients with superficial venous incompetence undergoing treatment of a saphenous trunk, duplex ultrasound surveillance should be considered one to four weeks after treatment.	IIa	C

INTERVENTIONS FOR SAPHENOUS TRUNK INCOMPETENCE

non-thermal



META-ANALYSIS / SYSTEMATIC REVIEWS

At long-term (≥ 5 yrs) follow-up:

- EVLA, (RFA) and HLS were equally effective[1,2]
- UGFS was less effective than HLS and EVLA[1,2]

UGFS:	34% (95% CI: 26-44)	
HLS:	83% (95% CI: 72-90)	p <.001
EVLA:	88% (95% CI: 82-92)	p <.001

- Recurrent SFJ reflux was lower after HLS than after EVLA / FOAM[1]
- Quality of life improved equally after EVLA and HLS[1]
- After EVLA (vs HLS): lower intraoperative blood loss, less operation time, less complications[3]

[1]Hamann et al, EJVES 2017; [2]Kheirelseid et al, JVS VLD 2018; [3]Cao et al. Int Wound J 2019

EVLA *vs* HLS

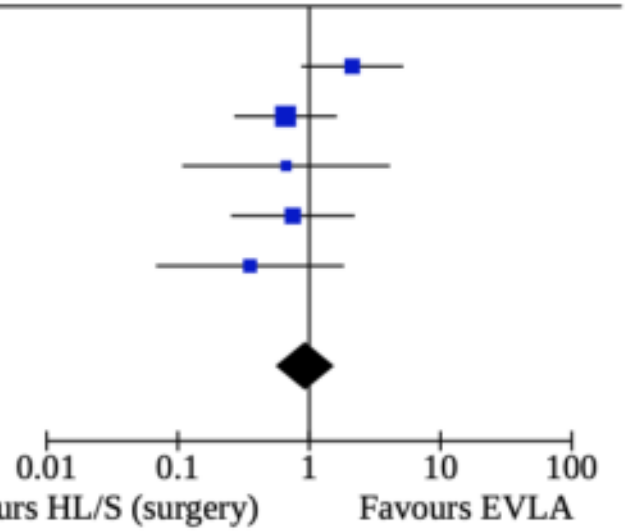
Analysis 6.2. Comparison 6: Endovenous laser ablation versus SFJ ligation and stripping (HL/S, surgery), Outcome 2: Technical success > 5 years

Study or Subgroup	EVLA Events	EVLA Total	HL/S (surgery) Events	HL/S (surgery) Total	Weight	Odds Ratio M-H, Fixed, 95% CI
HELP-1 2011	100	108	94	110	20.0%	2.13 [0.87 , 5.20]
Magna 2013	49	63	53	63	34.1%	0.66 [0.27 , 1.62]
Rasmussen 2007	66	69	66	68	8.4%	0.67 [0.11 , 4.12]
Rasmussen 2011	136	144	136	142	22.0%	0.75 [0.25 , 2.22]
Vernermo 2016	51	57	48	50	15.6%	0.35 [0.07 , 1.84]
Total (95% CI)		**441**		**433**	**100.0%**	**0.93 [0.57 , 1.50]**
Total events:	402		397			

Heterogeneity: $Chi^2 = 5.44$, df = 4 (P = 0.24); $I^2 = 27\%$

Test for overall effect: Z = 0.31 (P = 0.75)

Test for subgroup differences: Not applicable



Whing et al. Cochrane Database of Systematic Reviews 2021, Issue 8. Art. No.: CD005624

EVLA *vs* FOAM

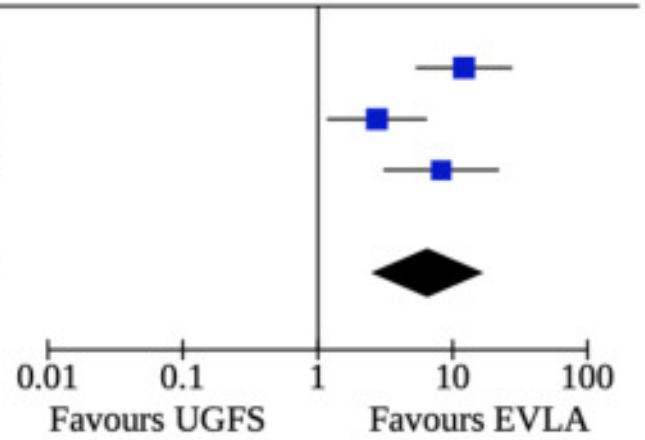
Analysis 3.2. Comparison 3: Endovenous laser ablation versus ultrasound-guided foam sclerotherapy, Outcome 2: Technical success > 5 years

Study or Subgroup	EVLA Events	EVLA Total	UGFS Events	UGFS Total	Weight	Odds Ratio M-H, Random, 95% CI
Magna 2013	49	63	15	67	34.8%	12.13 [5.31 , 27.72]
Rasmussen 2011	136	144	124	144	34.1%	2.74 [1.17 , 6.45]
Vernermo 2016	51	57	30	59	31.0%	8.22 [3.06 , 22.07]
Total (95% CI)		**264**		**270**	**100.0%**	**6.47 [2.60 , 16.10]**
Total events:	236		169			

Heterogeneity: $Tau^2 = 0.44$; $Chi^2 = 6.33$, df = 2 (P = 0.04); $I^2 = 68\%$

Test for overall effect: Z = 4.02 (P < 0.0001)

Test for subgroup differences: Not applicable



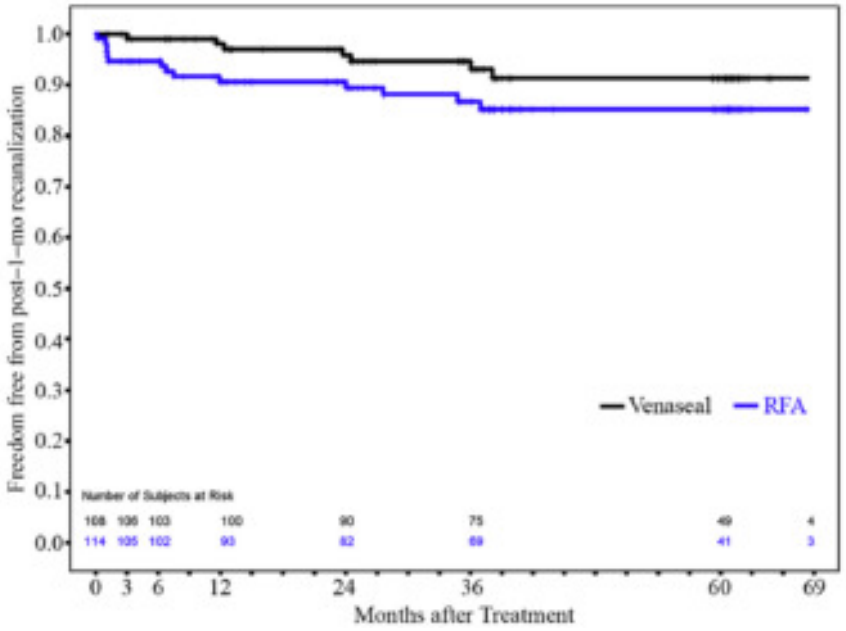
Whing et al. Cochrane Database of Systematic Reviews 2021, Issue 8. Art. No.: CD005624

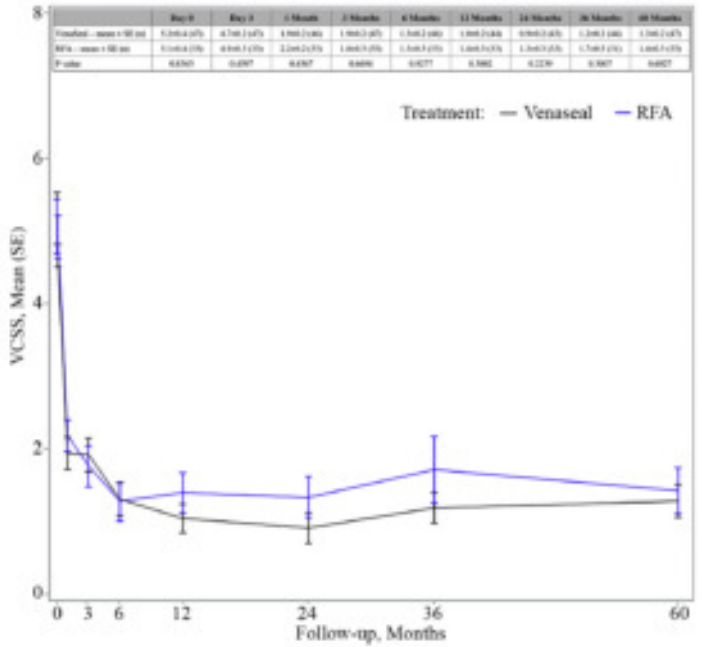
EVTA: 1ST CHOICE TREATMENT

Recommendation	Class	Level
For patients with great saphenous vein requiring treatment, endovenous thermal ablation is recommended as first choice treatment, in preference to high ligation/stripping and ultrasound-guided foam sclerotherapy.	I	A
For patients with saphenous trunk incompetence undergoing thermal ablation, the selection of the device should be left at the discretion of the treating physician.	I	B

NEW: CYANOACRYLATE ADHESIVE CLOSURE

- CAC and EVLA/RFA were equally effective after 12 and 24 months[1]
- 1 RCT comparing CAC vs RFA - 5 yrs extension study[2]





- hypersensitivity to cyanoacrylate 6-7%

[1]Garcia-Carpintero et al, JVS VLD 2020; [2]Morrison et al, JVS VLD 2020

CYANOACRYLATE ADHESIVE CLOSURE

Recommendation	Class	Level
For patients with great saphenous vein incompetence requiring treatment, cyanoacrylate adhesive closure should be considered when a non-thermal non-tumescent technique is preferred.	IIa	A

ULTRASOUND GUIDED FOAM SCLEROTHERAPY (UGFS)

- In general: UGFS less effective than EVLA and HLS

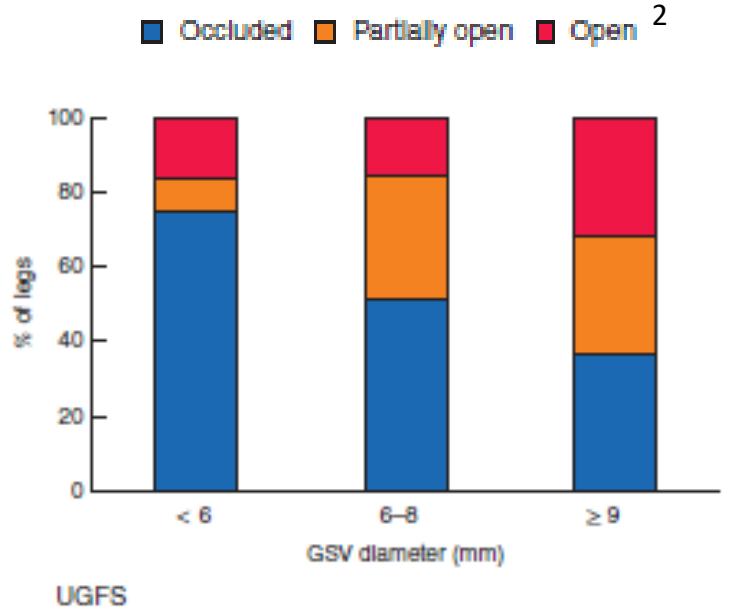
- If GSV diameter (mid-thigh) is less than 6 mm: ↑ effectiveness

recurrent reflux after 2 yrs[1]

GSV > 6 mm	63%
GSV < 6 mm	42%

occlusion rate at 1 yr[2]

GSV > 9 mm	< 40%
GSV < 6 mm	75%



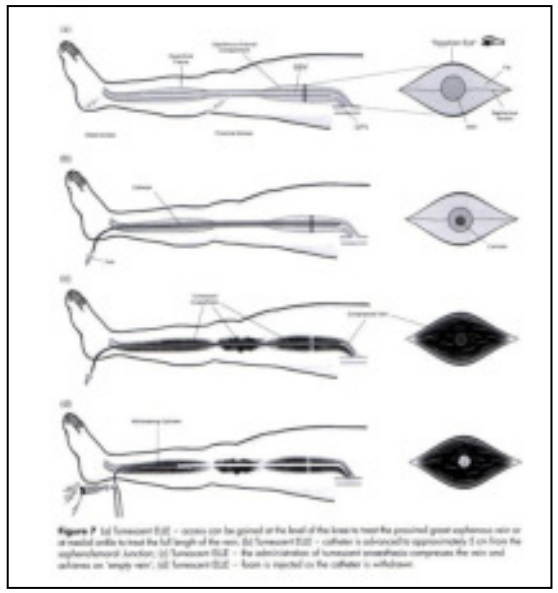
[1]Shadid et al, Phlebology 2015; [2]Venermo et al, BJS 2016

ULTRASOUND-GUIDED FOAM SCLEROTHERAPY (UGFS)

Recommendation	Class	Level
For patients with saphenous trunk incompetence requiring treatment, ultrasound guided foam sclerotherapy may be considered for treating saphenous trunks with a diameter less than 6 mm.	IIb	B
For patients with superficial venous incompetence treated with foam sclerotherapy, the procedure should be performed under ultrasound guidance.	I	C

NEW: CATHETER DIRECTED FOAM SCLEROTHERAPY (CDFS)

- CDFS was more effective than UGFS after 3 yrs:
  - GSV occlusion rate after CDFS 82%
  - GSV occlusion rate after UGFS 63% $p < .001$



Parsi et al. Phlebology 2009

Lim et al, Phlebology 2020

CATHETER DIRECTED FOAM SCLEROTHERAPY

Recommendation	Class	Level
For patients with great saphenous vein incompetence requiring treatment, catheter directed foam sclerotherapy with or without the use of perivenous tumescent solution may be considered.	IIb	B

NEW: MECHANOCHEMICAL ABLATION (MOCA)

- MOCA less effective than RFA/EVLA:

Occlusion rate after	MOCA	80%
	RFA	100%
	EVLA	100%

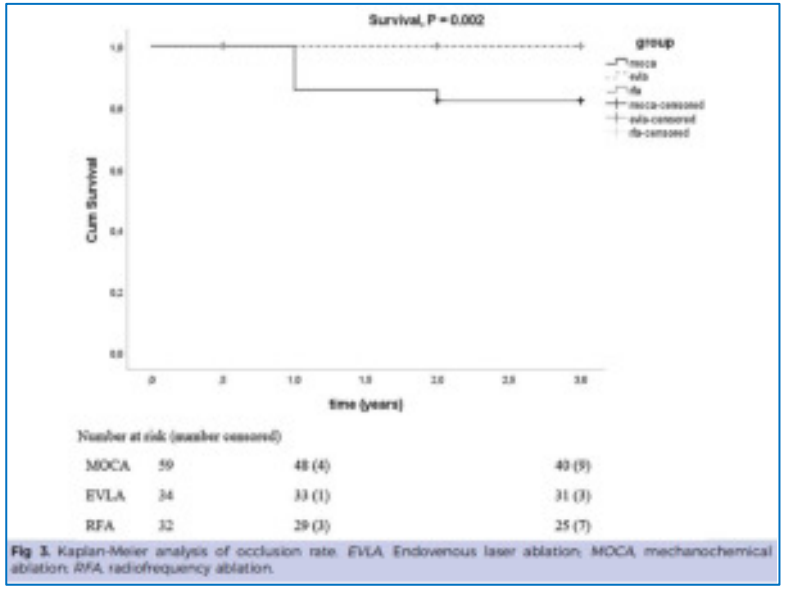


Fig 3. Kaplan-Meier analysis of occlusion rate. EVLA, Endovenous laser ablation; MOCA, mechanochemical ablation; RFA, radiofrequency ablation.

- Strong association between preoperative GSV diameter and recanalisation rate

Vähäaho et al, JVS VLD 2021

MECHANOCHEMICAL ABLATION

Recommendation	Class	Level
For patients with great saphenous vein incompetence requiring treatment, mechanochemical ablation may be considered when a non-thermal non-tumescent technique is preferred.	IIb	A

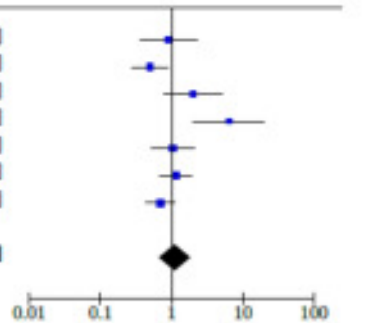
STILL VALID: HIGH LIGATION AND STRIPPING

- Modern surgery under tumescent anaesthesia
- Use of ultrasound guidance
- 5 yr results comparable to EVTA

Analysis 6.4. Comparison 6: Endovenous laser ablation versus SFJ ligation and stripping (HL/S, surgery), Outcome 4: Long-term recurrence > 5 years

Study or Subgroup	EVLA Events	EVLA Total	HL/S (surgery) Events	HL/S (surgery) Total	Weight	Odds Ratio M-H, Random, 95% CI
Flessenkämper 2013	11	45	14	53	12.1%	0.90 [0.36 , 2.25]
HELP-1 2011	29	108	47	110	16.6%	0.49 [0.28 , 0.87]
Magna 2013	14	63	8	63	11.7%	1.96 [0.76 , 5.08]
Pronk 2010	19	61	4	60	9.6%	6.33 [2.01 , 20.00]
Rasmussen 2007	25	69	24	68	14.8%	1.04 [0.52 , 2.10]
Rasmussen 2011	42	144	38	142	17.3%	1.13 [0.67 , 1.89]
RELACS 2012	69	152	70	129	17.9%	0.70 [0.44 , 1.12]
Total (95% CI)		**642**		**625**	**100.0%**	**1.09 [0.68 , 1.76]**
Total events:	209		205			

Heterogeneity: Tau² = 0.27; Chi² = 19.97, df = 6 (P = 0.003); I² = 70%
Test for overall effect: Z = 0.36 (P = 0.72)
Test for subgroup differences: Not applicable



- More postoperative complications:
  - bleeding
  - haematoma
  - wound infection
  - paresthesia

Whing et al. Cochrane Database of Systematic Reviews 2021, Issue 8. Art. No.: CD005624

HIGH LIGATION AND STRIPPING

Recommendation	Class	Level
For patients with great saphenous vein incompetence requiring treatment, high ligation/stripping should be considered, if endovenous thermal ablation options are not available.	IIa	A

INTERVENTIONS FOR INCOMPETENT TRIBUTARIES

Recommendation	Class	Level
For patients with chronic venous disease requiring treatment of varicose tributaries, ambulatory phlebectomy, ultrasound-guided foam sclerotherapy or a combination of both are recommended.	I	B

INTERVENTIONS FOR INCOMPETENT PERFORATING VEINS

Recommendation	Class	Level
For patients with chronic venous disease requiring treatment of incompetent perforating veins, endovenous ablation, division or ligation should be considered.	IIa	C

INTERVENTIONS FOR PATIENTS WITH RETICULAR VEINS AND TELANGIECTASIAS

Two important points before starting treatment:

Recommendation	Class	Level
For patients presenting with reticular veins and/or telangiectasias, duplex ultrasound of lower extremity veins should be performed before treatment, to look for associated incompetent veins.	I	C
For patients presenting with reticular veins and/or telangiectasias, significant associated incompetent veins should be treated first, before considering treatment of smaller veins.	I	C

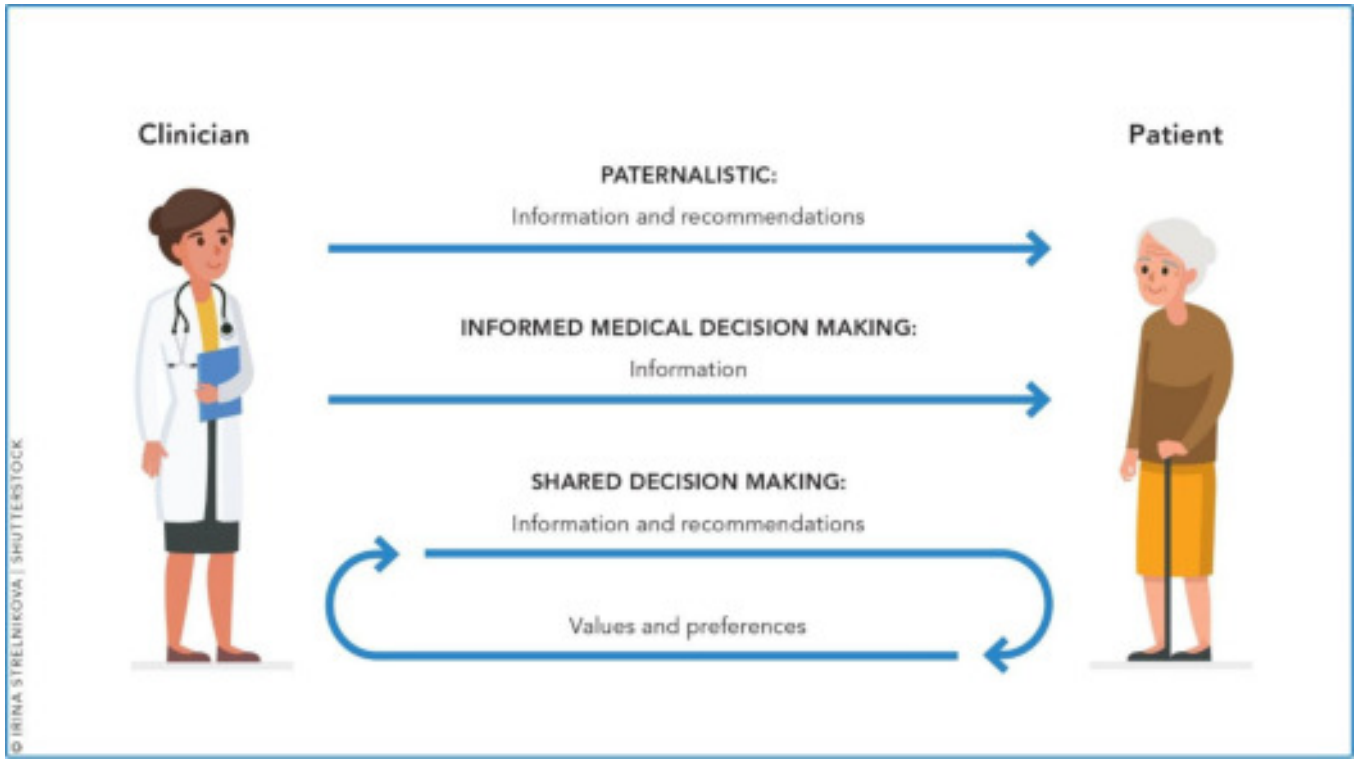
INTERVENTIONS FOR PATIENTS WITH RETICULAR VEINS AND TELANGIECTASIAS

Recommendation	Class	Level
For patients with reticular veins, where treatment is planned, sclerotherapy is recommended, as the first choice treatment.	I	A
For patients with telangiectasias, where treatment is planned, sclerotherapy should be considered.	IIa	A
For patients with telangiectasias, where treatment is planned, transcutaneous laser should be considered.	IIa	B

INTERVENTIONAL TREATMENT STRATEGY FOR PATIENTS WITH SUPERFICIAL VENOUS INCOMPETENCE

STRATEGY – SHARED DECISION MAKING (SDM)

"a collaborative process through which a clinician supports a patient to reach a decision about his/her treatment"



ILLUSTRATIVE SUMMARY FOR GSV INCOMPETENCE

Technique	Published follow up	Reflux abolition	Quality of life improvement	Tumescence needed	Risk for nerve injury below mid-calf‡
EVTA	≥ 5 y	+++	+++	Yes	Yes
HLS	≥ 5 y	+++	+++	Yes†	Yes
CAC	3-5 y	+++	+++	No	No
UGFS	≥ 5 y	+/++*	++/+++*	No	No
CDFS	1 y	++	++	Yes/no	No
MOCA	3 y	++	+++	No	No

*Truncal diameter < 6 mm

†Or alternative anaesthesia technique

‡Other complications not mentioned

SMALL SAPHENOUS VEIN (SSV) INCOMPETENCE

Recommendation	Class	Level
For patients with small saphenous vein incompetence requiring treatment, endovenous thermal ablation is recommended in preference to surgery or foam sclerotherapy.	I	A
For patients with small saphenous vein incompetence requiring treatment, endovenous non-thermal non-tumescent ablation methods may be considered.	IIb	B
For patients with small saphenous vein incompetence treated by endovenous thermal ablation, care should be taken to avoid injury to the sural nerve if cannulation is carried out below midcalf level.	I	B

ANTERIOR ACCESSORY SAPHENOUS VEIN (AASV) INCOMPETENCE

Recommendation	Class	Level
For patients with incompetence of the anterior accessory saphenous vein requiring treatment, endovenous thermal ablation should be considered.	IIa	C
For patients with incompetence of the anterior accessory saphenous vein requiring treatment, ultrasound guided foam sclerotherapy may be considered.	IIb	C

CONCOMITANT VS DELAYED TRIBUTARY TREATMENT ?

concomitant: less subsequent interventions

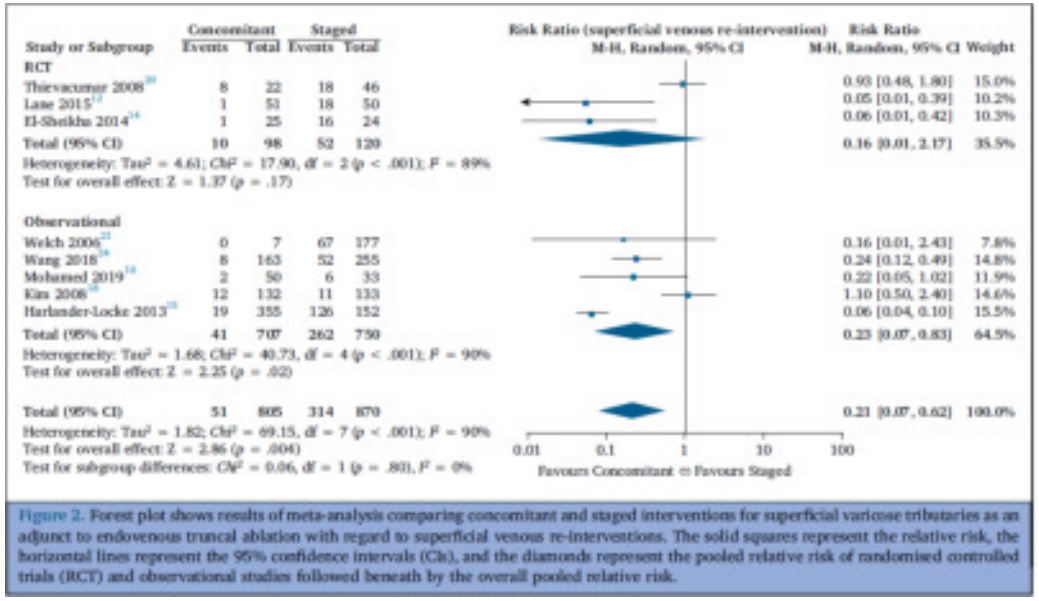


Figure 2. Forest plot shows results of meta-analysis comparing concomitant and staged interventions for superficial varicose tributaries as an adjunct to endovenous truncal ablation with regard to superficial venous re-interventions. The solid squares represent the relative risk, the horizontal lines represent the 95% confidence intervals (CIs), and the diamonds represent the pooled relative risk of randomised controlled trials (RCT) and observational studies followed beneath by the overall pooled relative risk.

no difference in complications

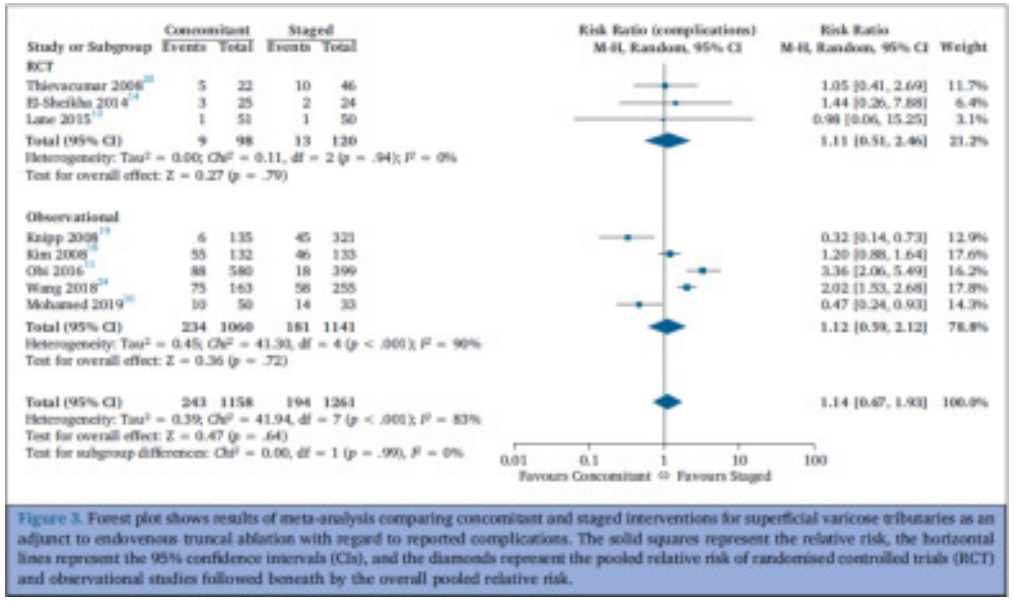


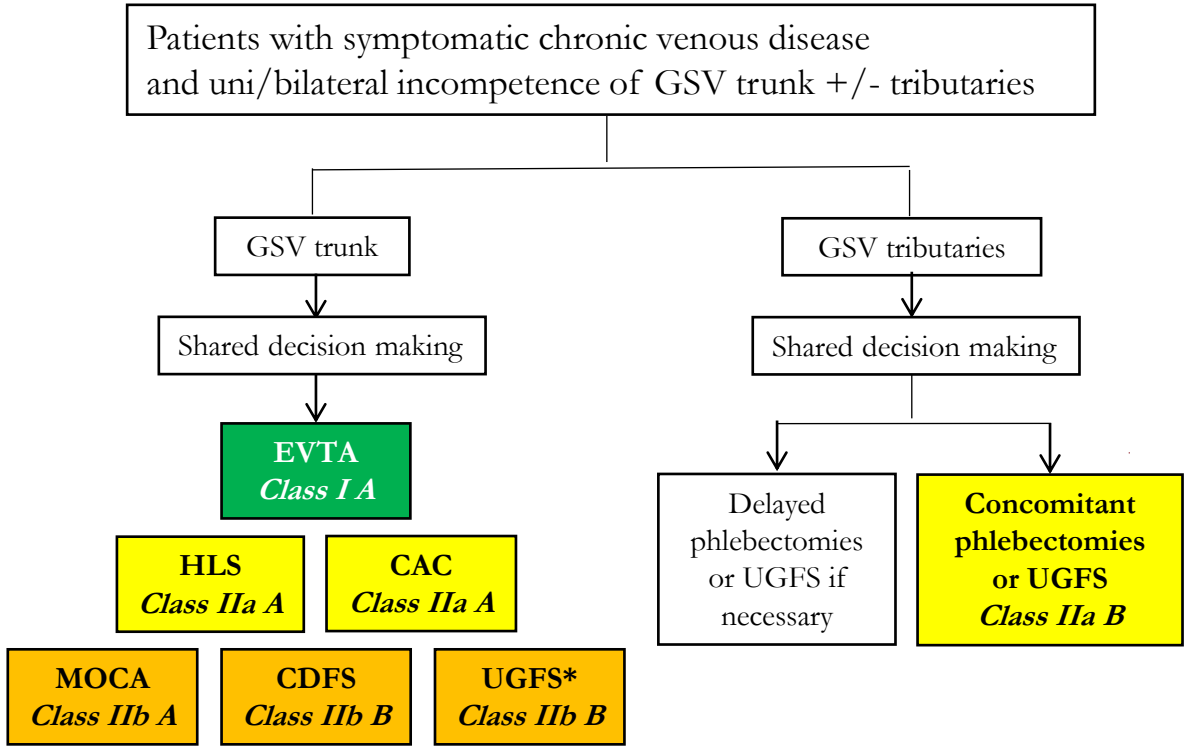
Figure 3. Forest plot shows results of meta-analysis comparing concomitant and staged interventions for superficial varicose tributaries as an adjunct to endovenous truncal ablation with regard to reported complications. The solid squares represent the relative risk, the horizontal lines represent the 95% confidence intervals (CIs), and the diamonds represent the pooled relative risk of randomised controlled trials (RCT) and observational studies followed beneath by the overall pooled relative risk.

Aherne et al. EJVES 2020;60:430-42

CONCOMITANT VS DELAYED TRIBUTARY TREATMENT ?

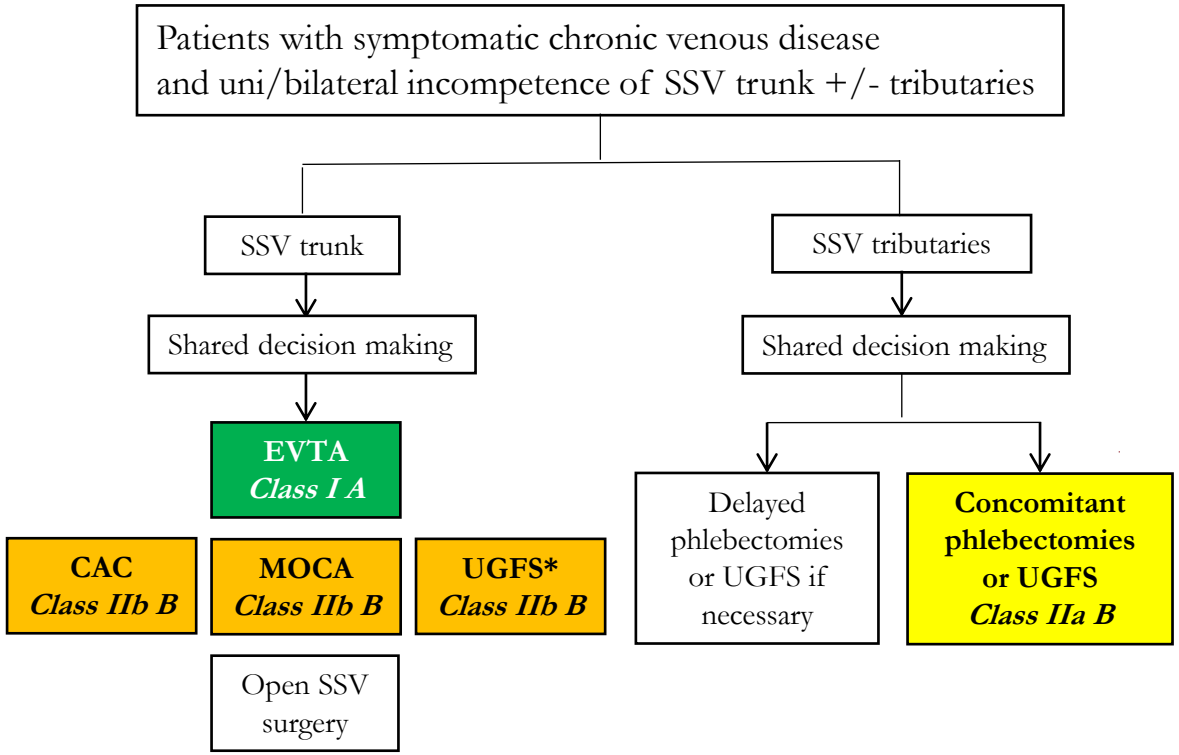
Recommendation	Class	Level
For patients with an incompetent saphenous trunk treated with endovenous thermal or non-thermal ablation, concomitant tributary treatment should be considered, as part of a shared decision process.	IIa	B

STRATEGY: GSV +/- TRIBUTARIES



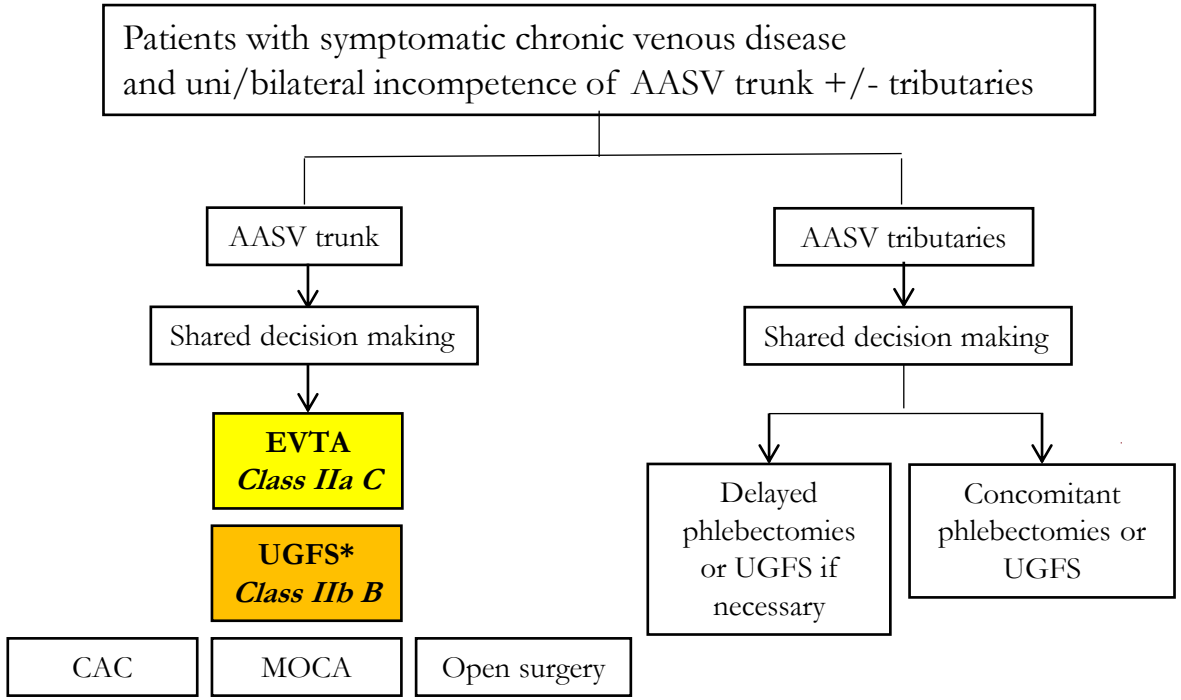
* If GSV diameter is < 6 mm

STRATEGY: SSV +/- TRIBUTARIES



* If GSV diameter is < 6 mm

STRATEGY: AASV +/- TRIBUTARIES



* If GSV diameter is < 6 mm

STRATEGY: INCOMPETENT PERFORATING VEINS

Recommendation	Class	Level
For most patients with varicose veins, without skin changes related to chronic venous disease, treatment of incompetent lower leg perforating veins is not recommended.	III	C
For patients with advanced skin changes (CEAP clinical class C4b, C5 or C6), with isolated or residual incompetent perforating veins, thought to be significant, treatment may be considered.	IIb	C

STRATEGY: PRESERVATION OF THE SAPHENOUS TRUNK

CHIVA

Recommendation	Class	Level
For patients with superficial venous incompetence requiring treatment, ambulatory conservative haemodynamic treatment of venous incompetence (CHIVA) may be considered, if performed by physicians experienced in this treatment strategy.	IIb	B

ASVAL

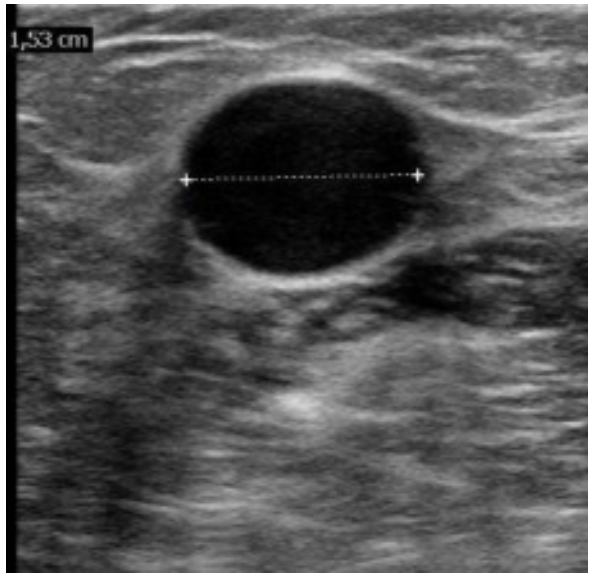
Recommendation	Class	Level
For patients with uncomplicated varicose veins (CEAP clinical class C2) requiring treatment, phlebectomies with preservation of the saphenous trunk (ASVAL) may be considered.	IIb	C

CHIVA : ambulatory conservative haemodynamic treatment of venous incompetence in outpatients
(= French acronym for 'Cure Hémodynamique de l'Insuffisance Veineuse en Ambulatoire')

ASVAL: ambulatory selective varices ablation under local anaesthesia

STRATEGY: VERY LARGE SAPHENOUS TRUNKS

Recommendation	Class	Level
For patients with an incompetent great saphenous vein with a very large truncal diameter (more than 12 mm), endovenous thermal ablation should be considered.	IIa	C



preoperative ⌀ 15 mm

with tumescent (RFA catheter in GSV)

STRATEGY: FOOT AND ANKLE VARICOSE VEINS

Recommendation	Class	Level
For patients presenting with foot and ankle varicose veins, phlebectomy, sclerotherapy and foot perforating vein ligation may be considered during or after ablation of proximal reflux.	IIb	C

RECURRENT VARICOSE VEINS - CAUSES

Cause	Description
Tactical error	**Persistence of reflux due to inappropriate intervention:**
	Inadequate pre-operative DUS, not identifying the source of reflux
	Inadequate choice of cannulation site(s)
Technical error	**Persistence of reflux due to inadequate intervention**
	for endovenous procedures:
	The saphenous trunk cannot be cannulated
	Poor ultrasound visualization of the target segment and the SFJ or SPJ
	The amount of energy/glue/sclerosant applied is insufficient
	for open surgical procedures:
	Incomplete stripping
	Other surgical failure
Neovascularisation, according to DUS	**Presence of multiple new small tortuous refluxing veins in anatomic proximity to a previous intervention:**
	Reflux from a previously ligated or ablated SFJ, SPJ, PV or tributary
	New veins visible on DUS in connection with varicosities
Recanalisation, according to DUS	**Initially ablated saphenous segment partially or completely reopened with reflux**
Disease progression, according to DUS	**Development of venous reflux as a result of the natural history and progression of the disease, with reflux occurring at new sites**

DUS = duplex ultrasound; SFJ = saphenofemoral junction; SPJ = saphenopopliteal junction; PV = perforating vein

STRATEGY: RECURRENT VARICOSE VEINS

Recommendation	Class	Level
For patients with symptomatic recurrent varicose veins due to saphenous trunk incompetence, endovenous thermal ablation or ultrasound guided foam sclerotherapy with or without phlebectomy should be considered.	IIa	B
For patients with symptomatic recurrent varicose veins requiring treatment, where endovenous ablation is possible, re-exploration of the groin or popliteal fossa is not recommended.	III	B
For patients with symptomatic recurrent varicose veins without truncal incompetence, ultrasound guided foam sclerotherapy and/or ambulatory phlebectomy should be considered.	IIa	C

INTERVENTIONS FOR DEEP VENOUS PATHOLOGY

ILIAC VEIN OUTFLOW OBSTRUCTION

- Indications for treatment:
  - Symptomatic CVD patients with uni- or bilateral CEAP clinical class C3 – C6
  - Villalta score pointing at moderate (10-14) or severe (≥ 15 or venous leg ulcer) PTS
  - Venous claudication
  - At least 50% lumen narrowing on venography, CTV, MRV and/or intravascular ultrasound (IVUS)

  Note: treatment is NOT indicated in asymptomatic patients

- Procedure:
  - Ideally in centers with a high level of expertise
  - General anaesthesia for fibrotic lesions in PTS; local + sedation for NIVL
  - Use of IVUS to guide the procedure
  - Angioplasty plus stenting (appropriate type/size)

OUTCOME OF RECANALISATION AND STENTING?

- Limited evidence due to heterogeneity across trials and reports
- Lack of properly defined outcome criteria
- Lack of well designed RCTs

Eur J Vasc Endovasc Surg (2016) 51, 100–120

REVIEW

Editor's Choice – A Systematic Review of Endovenous Stenting in Chronic Venous Disease Secondary to Iliac Vein Obstruction

M.J. Seager, A. Busuttil, B. Dharmarajah, A.H. Davies *

Department of Surgery and Cancer, Imperial College London, Charing Cross Hospital, London, UK

Conclusions: The quality of evidence to support the use of deep venous stenting to treat obstructive CVD is currently weak. The treatment does however appear promising and is safe and should therefore be considered as a treatment option while the evidence base is improved.

ONE RCT COMPARING 'BEST MEDICAL TREATMENT' WITH ILIAC VEIN STENTING – QOL?

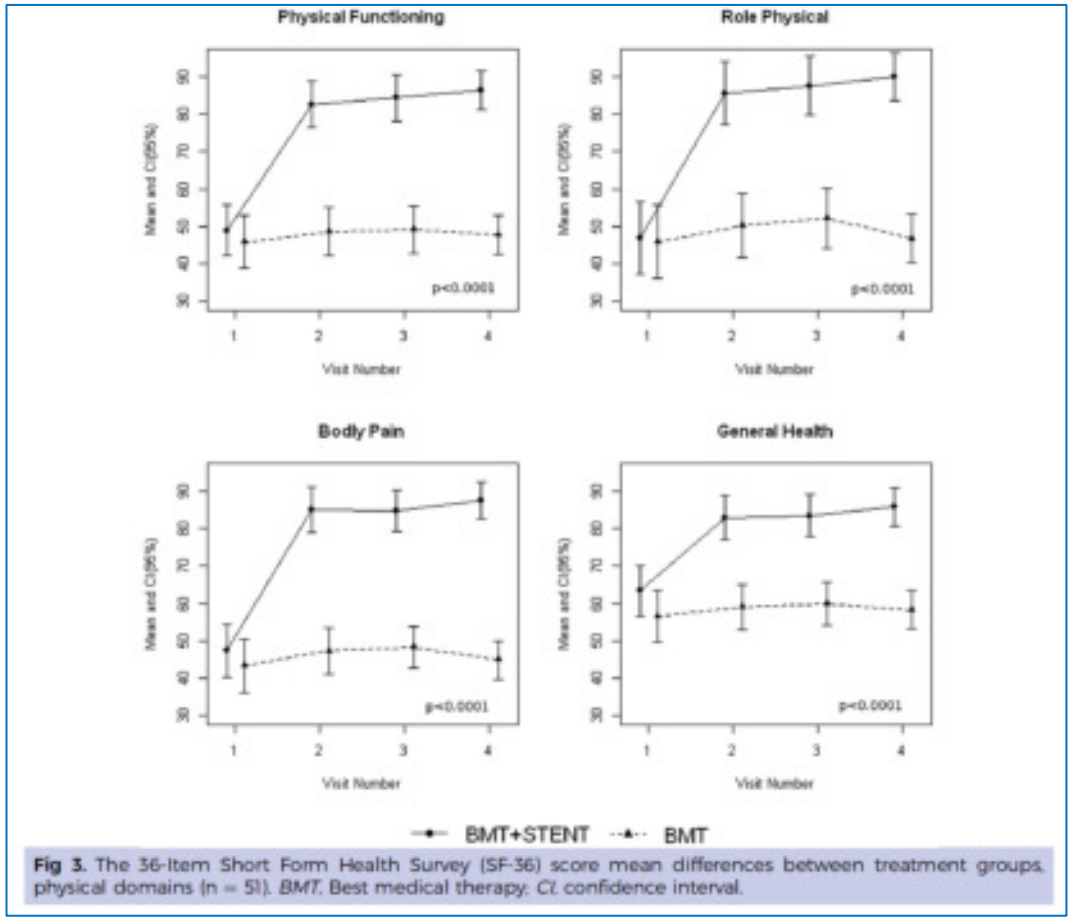


Fig 3. The 36-Item Short Form Health Survey (SF-36) score mean differences between treatment groups. physical domains (n = 51). *BMT*, Best medical therapy; *CI*, confidence interval.

SF36 - physical domains

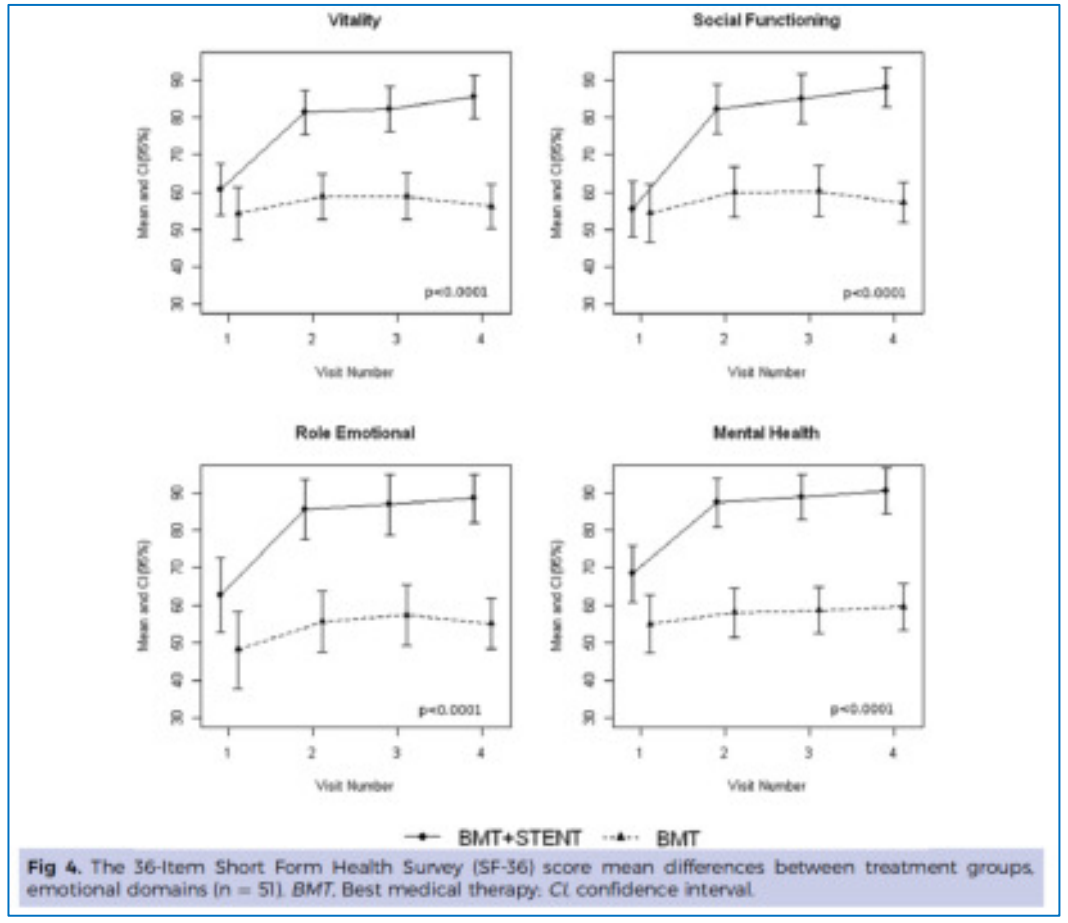


Fig 4. The 36-Item Short Form Health Survey (SF-36) score mean differences between treatment groups. emotional domains (n = 51). *BMT*, Best medical therapy; *CI*, confidence interval.

SF36 - emotional domains

Rossi et al. JVS VLD 2018;6:183-91

SURGICAL OR HYBRID RECONSTRUCTION

- Indication:
  - Recalcitrant venous leg ulcer
  - Severe PTS
  - Disabling venous claudication
- If endovascular options alone are not appropriate:
  - Surgical: Palma +/- AV fistula
  - Hybrid: endophlebectomy of CFV +/- AV fistula and stenting

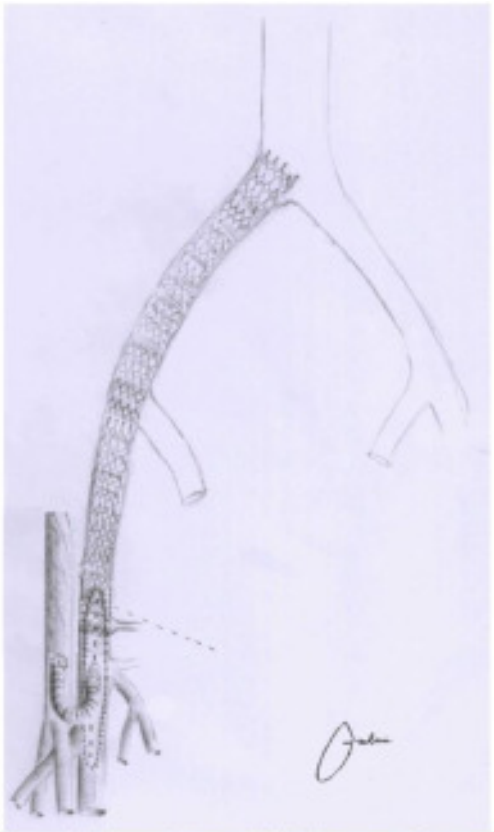


Fig 6. Hybrid procedure: endophlebectomy of the common femoral vein (CFV) and the orifice of the deep femoral vein (DFV), venous recanalization with stenting of the common and external iliac veins and the CFV, and loop-shaped arteriovenous fistula with 6-mm externally supported polytetrafluoroethylene between the common femoral artery and the CFV.

Schleimer et al. JVS VLD 2019;7: 592-600

STRATEGY: ILIAC VEIN OUTFLOW OBSTRUCTION (1)

Recommendation	Class	Level
For patients with iliac vein outflow obstruction and severe symptoms/signs, endovascular treatment should be considered, as the first choice treatment.	IIa	B
For patients with iliac vein outflow obstruction undergoing endovascular treatment, the use of intravascular ultrasound should be considered to guide treatment.	IIa	C

STRATEGY: ILIAC VEIN OUTFLOW OBSTRUCTION (2)

Recommendation	Class	Level
For patients with iliac vein outflow obstruction suffering from a recalcitrant venous ulcer, severe post-thrombotic syndrome or disabling venous claudication, surgical or hybrid deep venous reconstruction may be considered when endovascular options alone are not appropriate.	IIb	C
For patients with iliac vein outflow obstruction, without severe symptoms, endovascular nor surgical interventions are recommended.	III	C

SURVEILLANCE

Recommendation	Class	Level
For patients undergoing either endovascular or surgical reconstruction of iliac vein outflow obstruction, duplex ultrasound surveillance is recommended one day and two weeks after the intervention and at regular intervals thereafter.	I	C

MULTIDISCIPLINARY TEAM

Recommendation	Class	Level
For patients with iliac vein outflow obstruction, management by a multidisciplinary team is recommended.	I	C

DEEP VENOUS INCOMPETENCE

- Only for severe persisting symptoms and signs of CVD AFTER failed conservative management and AFTER correction of iliac vein outflow obstruction and abolition of superficial venous reflux
- Only for axial reflux down to the calf veins
- Only by specialised teams

Recommendation	Class	Level
For patients with extensive axial deep venous incompetence and severe persistent symptoms and signs, where previous management has failed, surgical repair of valvular incompetence may be considered in specialised centres.	IIb	B

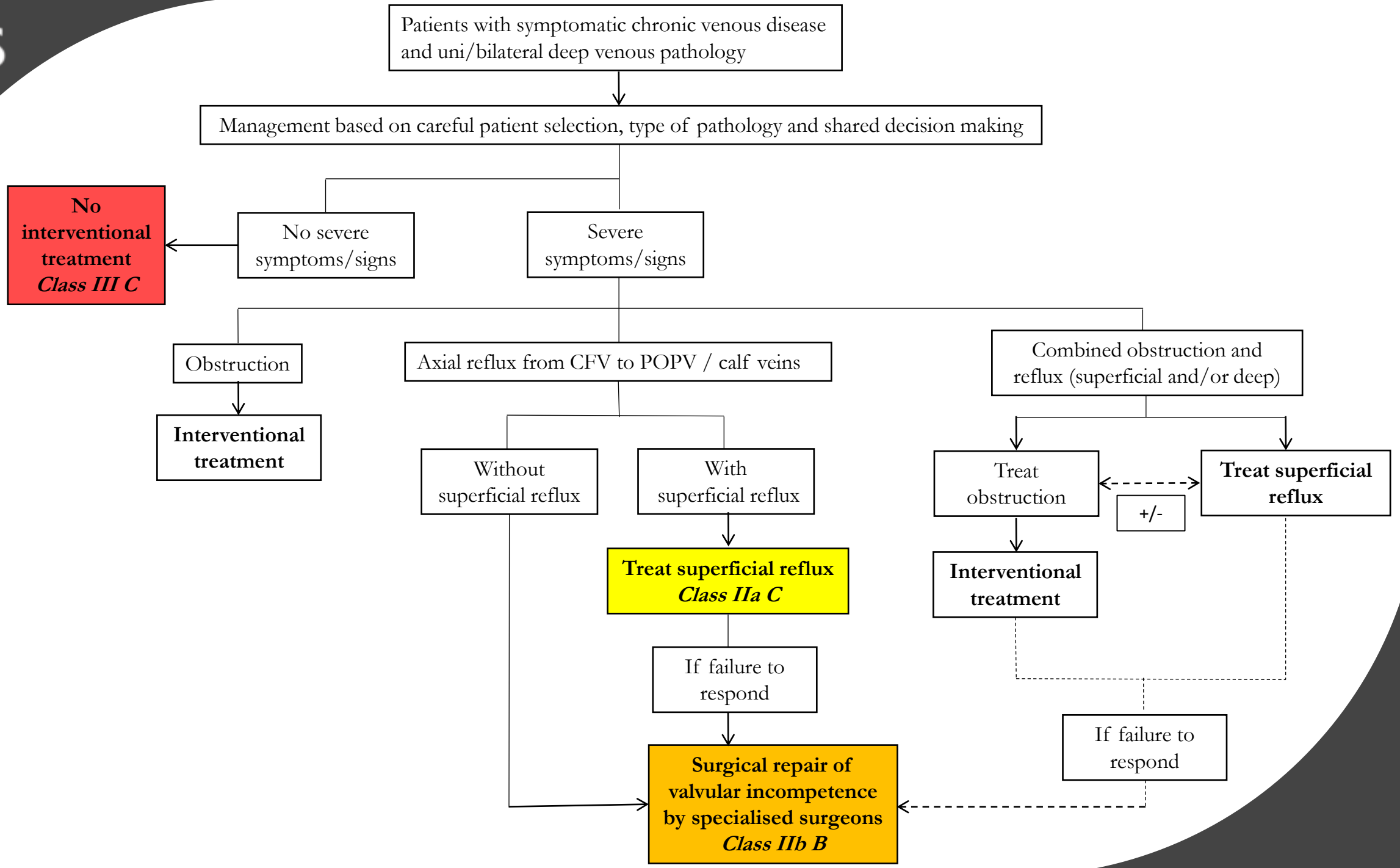
COMBINED SUPERFICIAL AND DEEP VENOUS INCOMPETENCE

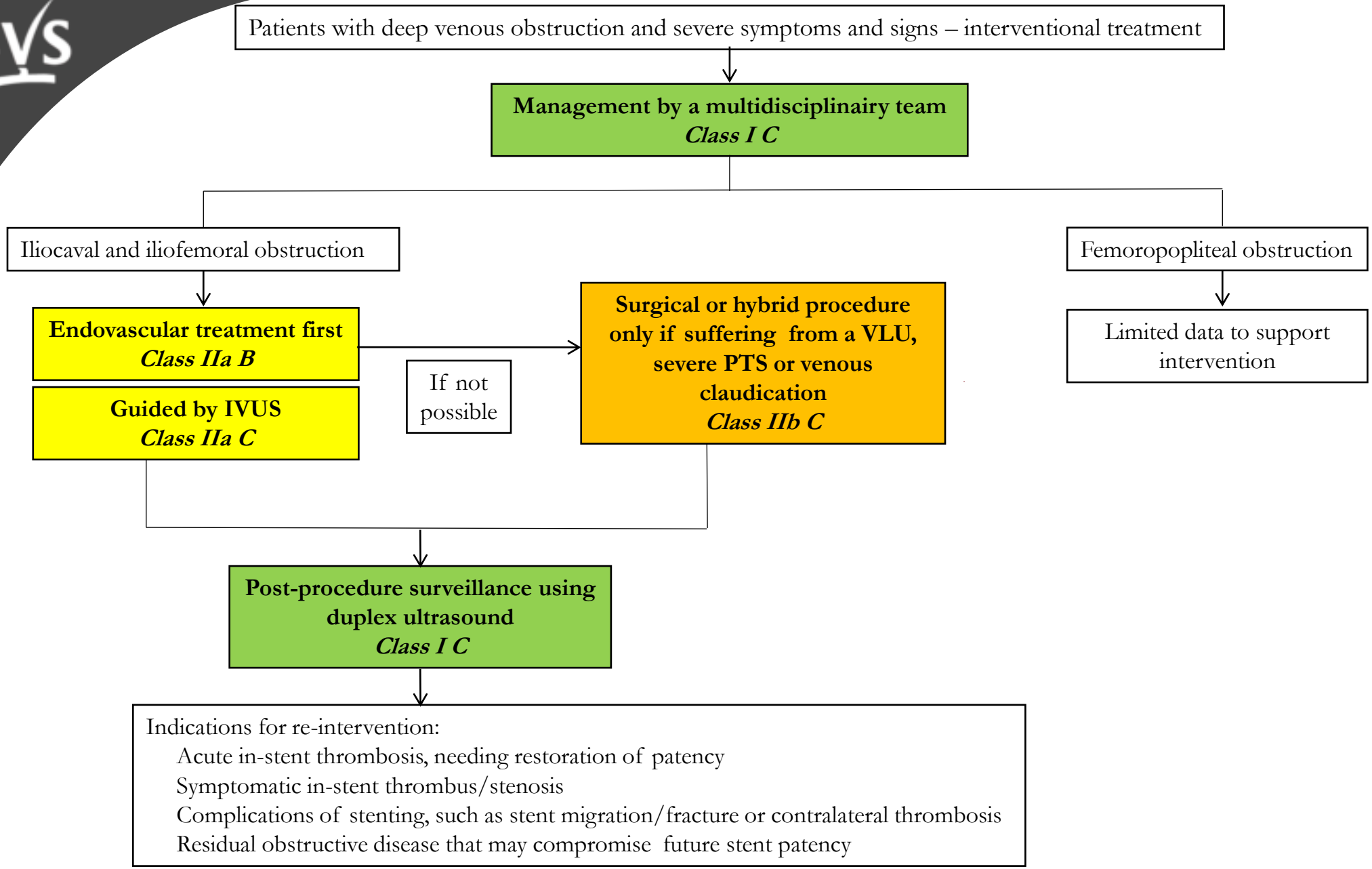
Recommendation	Class	Level
For patients with chronic venous disease, due to combined superficial and deep venous incompetence, treatment of incompetent superficial veins should be considered.	IIa	C

POPLITEAL VEIN ANEURYSM

Recommendation	Class	Level
In patients with a popliteal vein aneurysm with thromboembolic complications or those that are saccular, fusiform exceeding 20 mm, or containing thrombus, surgical repair should be considered.	IIa	C

INTERVENTIONAL TREATMENT STRATEGY FOR PATIENTS WITH DEEP VENOUS PATHOLOGY


Patients with symptomatic chronic venous disease and uni/bilateral deep venous pathology
Management based on careful patient selection, type of pathology and shared decision making
No interventional treatment Class III C
No severe symptoms/signs
Severe symptoms/signs
Obstruction
Interventional treatment
Axial reflux from CFV to POPV / calf veins
Without superficial reflux
With superficial reflux
Treat superficial reflux Class IIa C
If failure to respond
Surgical repair of valvular incompetence by specialised surgeons Class IIb B
Combined obstruction and reflux (superficial and/or deep)
Treat obstruction
+/-
Treat superficial reflux
Interventional treatment
If failure to respond


Patients with deep venous obstruction and severe symptoms and signs – interventional treatment
Management by a multidisciplinairy team
Class I C
Iliocaval and iliofemoral obstruction
Femoropopliteal obstruction
Endovascular treatment first
Class IIa B
Guided by IVUS
Class IIa C
If not possible
Surgical or hybrid procedure only if suffering from a VLU, severe PTS or venous claudication
Class IIb C
Limited data to support intervention
Post-procedure surveillance using duplex ultrasound
Class I C
Indications for re-intervention:
Acute in-stent thrombosis, needing restoration of patency
Symptomatic in-stent thrombus/stenosis
Complications of stenting, such as stent migration/fracture or contralateral thrombosis
Residual obstructive disease that may compromise future stent patency

PATIENTS WITH VENOUS LEG ULCERATION

BACKGROUND

- Venous leg ulcer has a considerable impact on QoL
- Neglected patient population with poor outcomes
- Often multiple contributing factors
- Care pathways are very important
- Appropriately trained specialist nurses or wound care professionals (multidisciplinary team)

VLU LOCAL TREATMENT

T.I.M.E.®

T Tissue debridement

I Infection and inflammation

M Moisture balance

E Edge of wound

Despite the lack of RCTs, the T.I.M.E.® strategy is widely adopted for the local treatment of VLUs

Systematic approach to wound management:

- surgical/sharp debridement
- mechanical debridement (washing solutions, whirlpool therapy, wet to dry dressings, ultrasound assisted debridement and lavage)
- enzymatic debridement (topical application of enzymes breaks down the tissue attaching necrotic tissue to the wound bed)
- autolytic debridement (application of dressings facilitates development of the body's own enzymes to rid a wound of necrotic tissue)
- biosurgical debridement (sterile larvae)

GENERAL RECOMMENDATIONS – ACTIVE VLU

Recommendation	Class	Level
For patients with active venous leg ulceration without infection, the use of local or systemic antibiotics to improve ulcer healing is not recommended.	III	B
For patients with active leg ulceration, objective arterial assessment is recommended.	I	C

VLU COMPRESSION THERAPY (1)

Recommendation	Class	Level
For patients with active venous leg ulceration, compression therapy is recommended to improve ulcer healing.	I	A
For patients with active venous leg ulceration, multilayer or inelastic bandages or adjustable compression garments, exerting a target pressure at least 40 mmHg at the ankle, are recommended to improve ulcer healing. .	I	A

VLU COMPRESSION THERAPY (2)

Recommendation	Class	Level
For patients with active venous leg ulceration, superimposed elastic compression stockings exerting a target pressure up to 40 mmHg at the ankle should be considered for small and recent onset ulcers.	IIa	B
For patients with active venous leg ulceration, with ankle pressure less than 60 mmHg, toe pressure less than 30 mmHg or ankle brachial index lower than 0.6, sustained compression therapy is not recommended. .	III	C

VLU COMPRESSION THERAPY (3)

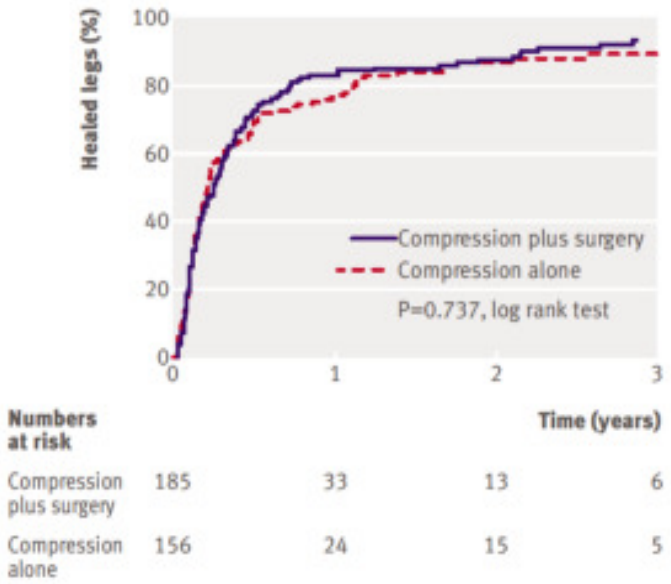
Recommendation	Class	Level
For patients with active venous leg ulceration, intermittent pneumatic compression should be considered when other compression options are not available, cannot be used, or have failed to promote ulcer healing.	IIa	B
For patients with a mixed ulcer due to coexisting arterial and venous disease, modified compression therapy under close clinical supervision, with a compression pressure less than 40 mmHg may be considered, provided the ankle pressure is higher than 60 mmHg. .	IIb	C

COMPRESSION TO PREVENT VLU RECURRENCE

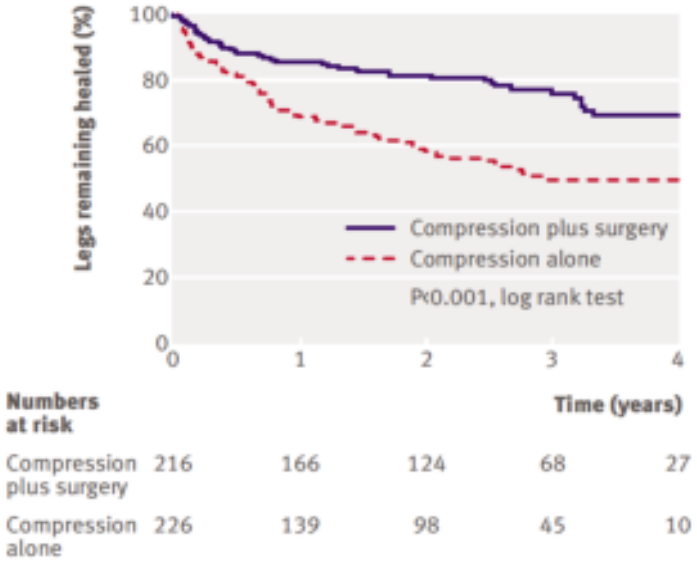
Recommendation	Class	Level
For patients with healed venous leg ulceration, long-term compression therapy should be considered to reduce the risk of ulcer recurrence.	IIa	B

SUPERFICIAL VENOUS INTERVENTION: ESCHAR STUDY

Interventions involved surgical stripping



No difference in VLU healing



Surgery reduces VLU recurrence

BMJ

RESEARCH

Long term results of compression therapy alone versus compression plus surgery in chronic venous ulceration (ESCHAR): randomised controlled trial

Manjit S Gohel, specialist registrar,[1] Jamie R Barwell, consultant vascular and transplant surgeon,[2] Maxine Taylor, leg ulcer nurse specialist,[1] Terry Chant, vascular nurse specialist,[3] Chris Foy, medical statistician,[4] Jonothan J Earnshaw, consultant surgeon,[5] Brian P Heather, consultant surgeon,[5] David C Mitchell, consultant surgeon,[3] Mark R Whyman, consultant surgeon,[1] Keith R Poskitt consultant surgeon[1]

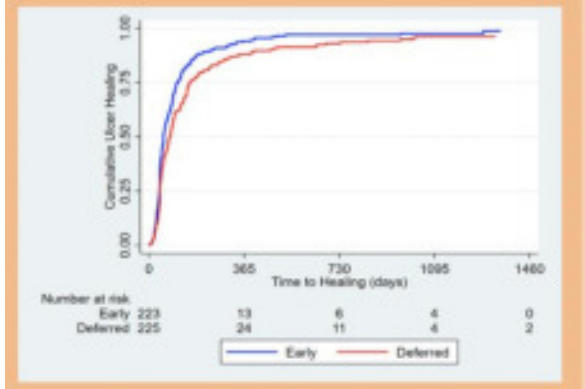
Gohel et al. BMJ 2007

SUPERFICIAL VENOUS INTERVENTION: EVRA STUDY

EVRA RCT: is early endovenous ablation of superficial reflux beneficial in venous leg ulcers?

450 participants randomized in 20 UK centers, follow-up to 5 years

Accelerated ulcer healing



HR 1.36
(95% CI 1.12-1.64,
p=.002)

Reduced ulcer recurrence rate

Ratio 0.66 (95% CI 0.48-0.90,
p=.003)

Highly likely to be cost-effective

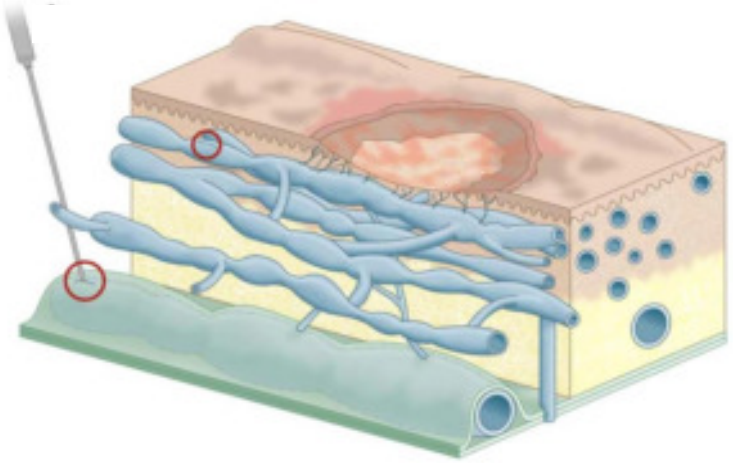
At 3 years, 91.6% likelihood of cost-effectiveness at threshold of £20,000 / QALY

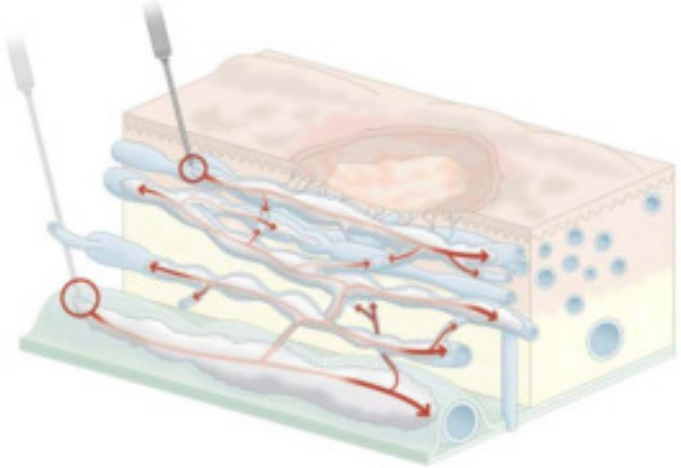
Gohel et al. NEJM 2018; Gohel et al. JAMA 2020

SUPERFICIAL VENOUS INTERVENTION FOR VLU

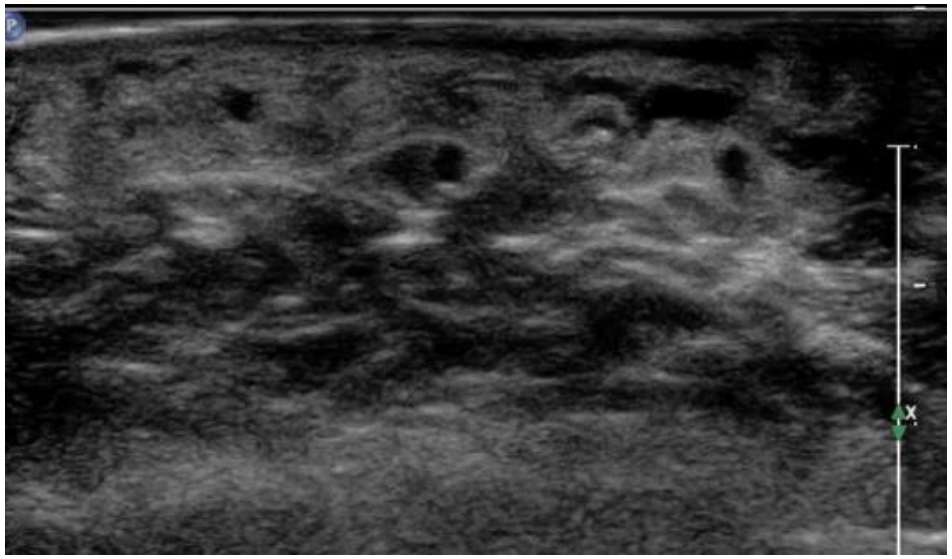
Recommendation	Class	Level
For patients with active venous leg ulceration and superficial venous incompetence, early endovenous ablation is recommended to accelerate ulcer healing.	I	B
For patients with superficial venous incompetence and healed venous leg ulceration, treatment of the incompetent veins is recommended to reduce the risk of ulcer recurrence. .	I	A

SCLEROTHERAPY OF SUB-ULCER VENOUS PLEXUS





Increasing popularity of sub-ulcer sclerotherapy



FOAM SCLEROTHERAPY OF SUB-ULCER VENOUS PLEXUS

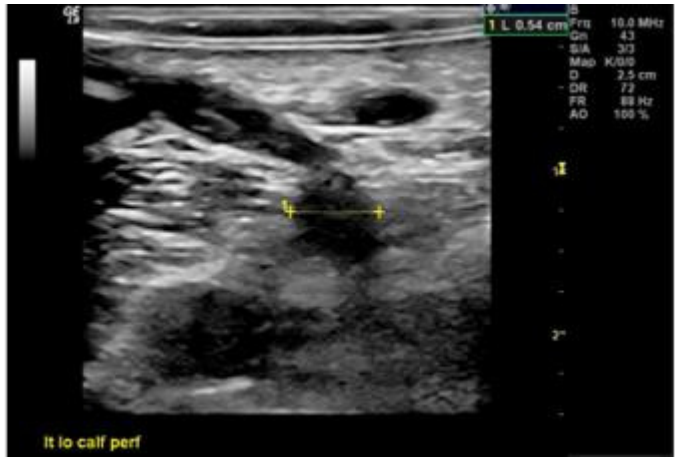
Recommendation	Class	Level
For patients with active venous leg ulceration, ablation of the sub-ulcer venous plexus using ultrasound guided foam sclerotherapy should be considered as part of the treatment strategy.	IIa	C

SUPERFICIAL VENOUS INTERVENTION FOR C5-C6 IN THE PRESENCE OF DEEP VENOUS INCOMPETENCE

Recommendation	Class	Level
For patients with superficial venous incompetence and active or healed venous leg ulceration, treatment of incompetent superficial veins is recommended, even in the presence of deep venous incompetence.	I	A

TREATMENT OF INCOMPETENT PERFORATING VEINS CLOSE TO A VLU

Recommendation	Class	Level
In patients with active venous leg ulceration due to superficial venous incompetence and perforating vein incompetence close to the ulcer, concomitant treatment of both truncal reflux and incompetent perforators may be considered.	IIb	C



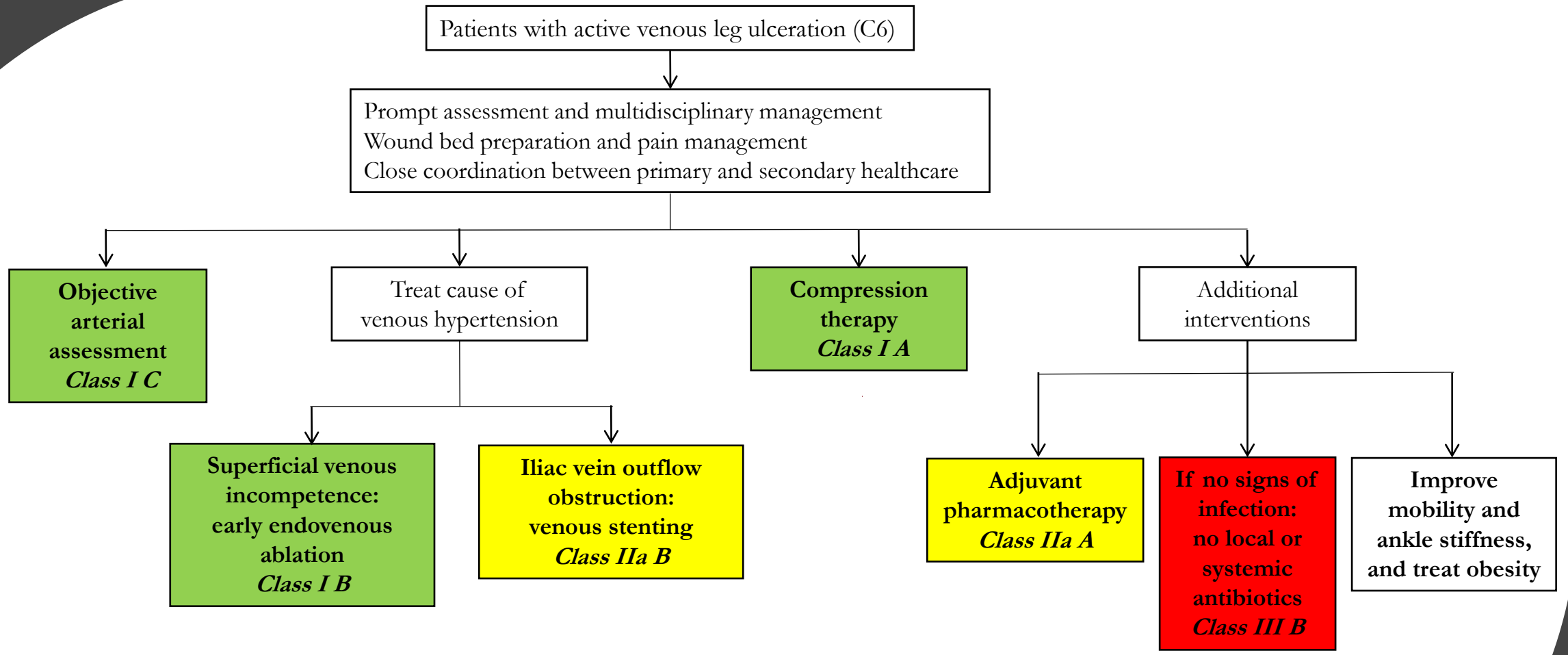
STENTING OF ILIAC VEIN OUTFLOW OBSTRUCTION FOR C5/C6

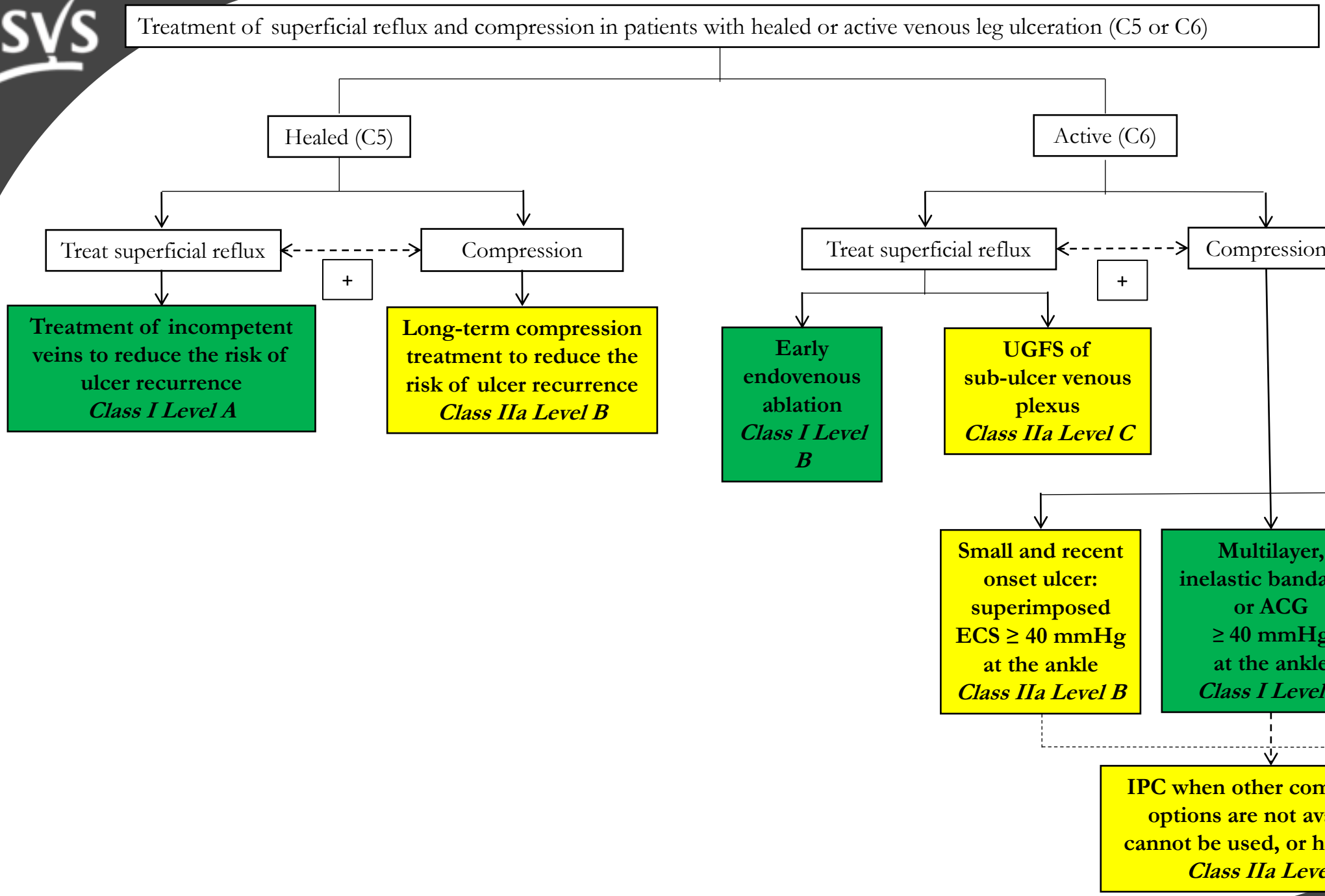
Recommendation	Class	Level
For patients with active or healed venous leg ulceration and iliac vein outflow obstruction, venous stenting should be considered.	IIa	B

PHARMACOTHERAPY

Recommendation	Class	Level
For patients with active venous leg ulceration, micronized purified flavonoid fraction, hydroxyethylrutosides, pentoxifylline or sulodexide should be considered, as an adjunct to compression and local wound care to improve ulcer healing.	IIa	A

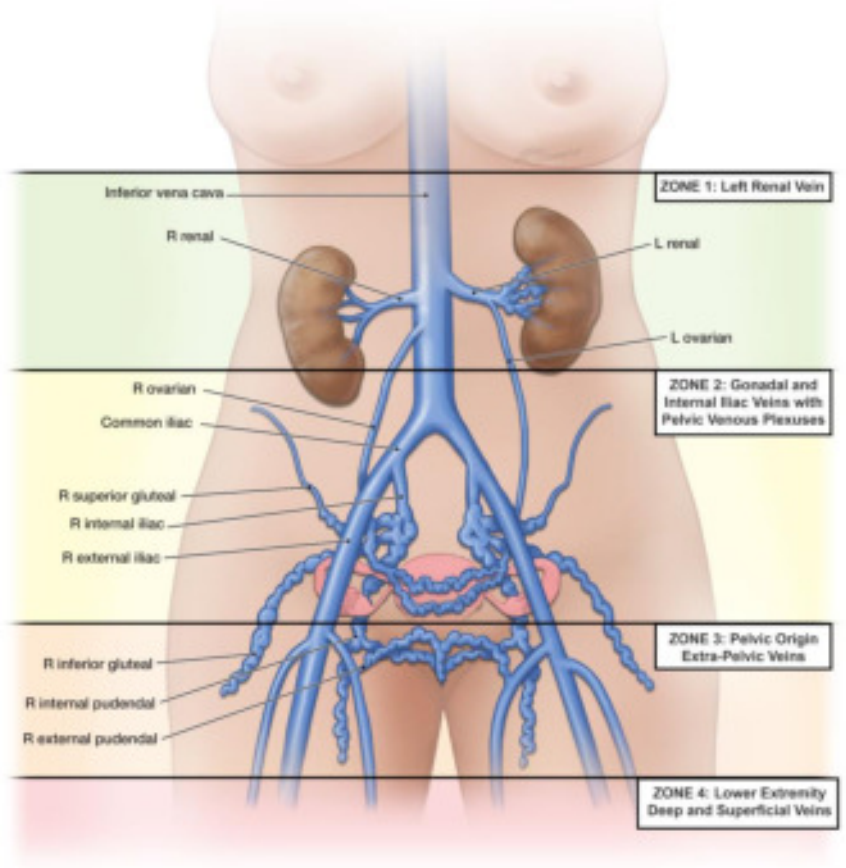
TREATMENT STRATEGY FOR PATIENTS WITH VLU


Patients with active venous leg ulceration (C6)
Prompt assessment and multidisciplinary management
Wound bed preparation and pain management
Close coordination between primary and secondary healthcare
Objective arterial assessment Class I C
Treat cause of venous hypertension
Compression therapy Class I A
Additional interventions
Superficial venous incompetence: early endovenous ablation Class I B
Iliac vein outflow obstruction: venous stenting Class IIa B
Adjuvant pharmacotherapy Class IIa A
If no signs of infection: no local or systemic antibiotics Class III B
Improve mobility and ankle stiffness, and treat obesity


Treatment of superficial reflux and compression in patients with healed or active venous leg ulceration (C5 or C6)
Healed (C5)
Active (C6)
Treat superficial reflux
+
Compression
Treatment of incompetent veins to reduce the risk of ulcer recurrence
Class I Level A
Long-term compression treatment to reduce the risk of ulcer recurrence
Class IIa Level B
Treat superficial reflux
+
Compression
Early endovenous ablation
Class I Level B
UGFS of sub-ulcer venous plexus
Class IIa Level C
Small and recent onset ulcer: superimposed ECS ≥ 40 mmHg at the ankle
Class IIa Level B
Multilayer, inelastic bandages or ACG ≥ 40 mmHg at the ankle
Class I Level A
Mixed ulcer*: compression < 40 mmHg under close supervision
Class IIb Level C
IPC when other compression options are not available, cannot be used, or have failed
Class IIa Level B

PATIENTS WITH VARICOSE VEINS RELATED TO PELVIC VENOUS DISORDERS

SVP CLASSIFICATION FOR PELVIC VENOUS DISORDERS



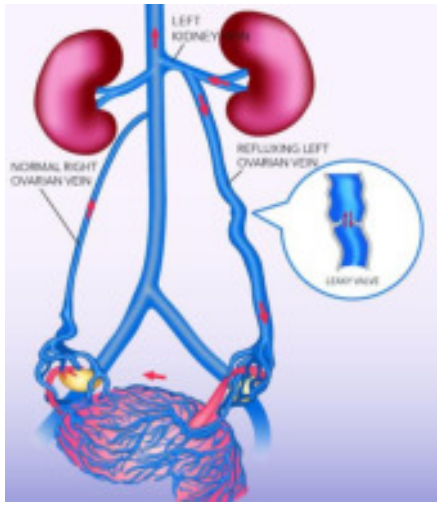
The four anatomical zones of the female abdomen and pelvis, where the 'SVP' classification for pelvic venous disorders can be applied. Symptoms (S), Varices (V), and Pathophysiology (P) are described related to these four anatomical zones.

Meissner et al. JVS VLD 2021;9:568-84.

PELVIC VEIN INCOMPETENCE

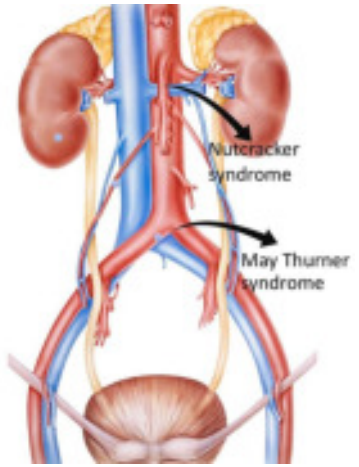
Primary sources:

- Left or right gonadal vein incompetence (ovarian testicular)
- Internal iliac vein incompetence
- Combination of both



Associated pathologies:

- Extrinsic compression
  - Compression syndromes
    - Left common iliac vein compression*
    - Left renal vein compression**
  - Tumor mass, endometriosis
- Intraluminal obstruction (post-thrombotic changes)



*Previously known as May-Thurner syndrome and ** Nutcracker syndrome

Khilnani et al. J Vasc Interv Radiol 2019; 30:781–789

CLINICAL PRESENTATION

- Pelvic symptoms: chronic pelvic pain, dyspareunia, post-coital ache
- Renal symptoms: left flank pain, haematuria
- Obstructive lower extremity symptoms and signs
- Lower extremity varicose veins of pelvic origin – vulvar varicose veins

CHRONIC PELVIC PAIN (CPP)

- Non-cyclic pain lasting for at least 6 months
  - Dull ache with acute exacerbations
  - Situated at lower abdomen, pelvis, lumbosacral, buttocks
- High prevalence: 4% - 43% of women (WHO data); pelvic venous disorders account for 16-31% of CPP cases
- Other potential causes of CPP: endometriosis, pelvic inflammatory disease, adhesions, adenomyosis, irritable bowel syndrome, interstitial cystitis, musculoskeletal and neurological problems (…)

Recommendation	Class	Level
For female patients with pelvic pain and a clinical suspicion of pelvic venous disorders, exclusion of other causes of pain is recommended.	I	C

VARICOSE VEINS OF PELVIC ORIGIN

- Atypical varicose veins (non-saphenous distribution)
- Saphenous truncal incompetence (GSV, AASV, SSV) and related varicosities
- Vulvar varicose veins

Pelvic escape points:

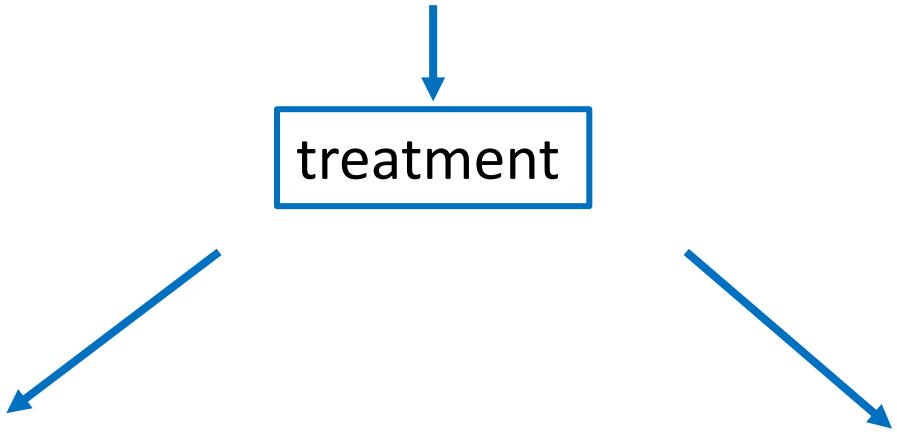
- Inguinal (I)
- Obturator (O)
- Clitoral (C)
- Perineal (P)
- Inferior gluteal (IG)
- Superior gluteal (SG)

INVESTIGATIONS

Recommendation	Class	Level
For patients presenting with symptomatic varicose veins where there may be a pelvic origin, specific duplex ultrasound assessment of pelvic escape points is recommended.	I	C
For female patients with suspected pelvic venous disorders, abdominal and/or transvaginal ultrasound should be considered to confirm the presence of venous pathology. .	IIa	B

TREATMENT OF PATIENTS WITH VARICOSE VEINS OF PELVIC ORIGIN

Among patients presenting with varicose veins of pelvic origin, <10% have been reported to have pelvic symptoms.



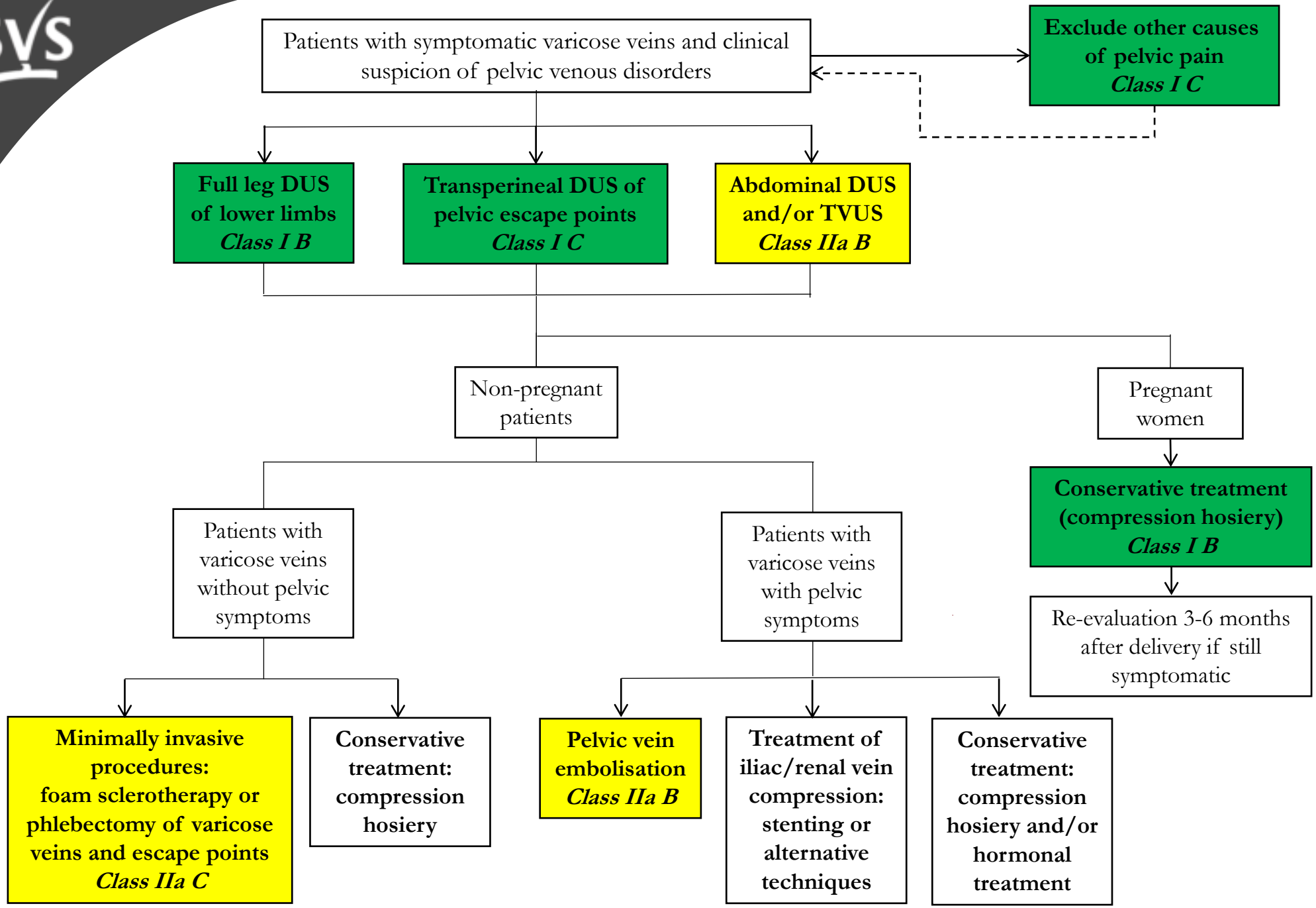
patients with varicose veins of pelvic origin without pelvic symptoms requiring treatment

patients with varicose veins of pelvic origin with pelvic symptoms requiring treatment

TREATMENT OF PATIENTS WITH VARICOSE VEINS OF PELVIC ORIGIN

STRATEGY: TREATMENT OF PATIENTS WITH VARICOSE VEINS OF PELVIC ORIGIN

Recommendation	Class	Level
For patients with varicose veins of pelvic origin without pelvic symptoms requiring treatment, local procedures for varicose veins and related pelvic escape points should be considered, as initial therapeutic approach.	IIa	C
For patients with varicose veins of pelvic origin without pelvic symptoms, pelvic vein embolisation as initial treatment should not be performed.	III	C
For patients with varicose veins of pelvic origin with pelvic symptoms requiring treatment, pelvic vein embolisation should be considered to reduce symptoms.	IIa	B


Patients with symptomatic varicose veins and clinical suspicion of pelvic venous disorders
Exclude other causes of pelvic pain
Class I C
Full leg DUS of lower limbs
Class I B
Transperineal DUS of pelvic escape points
Class I C
Abdominal DUS and/or TVUS
Class IIa B
Non-pregnant patients
Pregnant women
Patients with varicose veins without pelvic symptoms
Patients with varicose veins with pelvic symptoms
Conservative treatment (compression hosiery)
Class I B
Re-evaluation 3-6 months after delivery if still symptomatic
Minimally invasive procedures: foam sclerotherapy or phlebectomy of varicose veins and escape points
Class IIa C
Conservative treatment: compression hosiery
Pelvic vein embolisation
Class IIa B
Treatment of iliac/renal vein compression: stenting or alternative techniques
Conservative treatment: compression hosiery and/or hormonal treatment

SPECIAL CONSIDERATIONS

MANAGEMENT OF ACUTE COMPLICATIONS

- Superficial vein thrombosis (SVT): see ESVS guidelines on Venous Thrombosis[1]
- Haemorrhage:

Recommendation	Class	Level
For patients who have had acute spontaneous bleeding from superficial veins, referral for urgent assessment and treatment is recommended.	I	C
For patients with chronic venous disease who have suffered from an episode of acute bleeding of superficial veins or telangiectasias, local foam sclerotherapy should be considered to prevent recurrent bleeding. .	IIa	C

[1] *Kakkos S. et al. Eur J Vasc Endovasc Surg 2021;61:9-82*

MANAGEMENT OF CVD PATIENTS WITH SPECIAL PATIENT CHARACTERISTICS (1)

Obesity:

Recommendation	Class	Level
For patients with chronic venous disease, who are obese, weight loss should be considered for improving venous outcomes.	IIa	C
For obese patients with saphenous trunk incompetence requiring treatment, endovenous ablation should be considered. .	IIa	B

MANAGEMENT OF CVD PATIENTS WITH SPECIAL PATIENT CHARACTERISTICS (2)

Pregnancy:

Recommendation	Class	Level
For pregnant women presenting with symptoms and/or signs of chronic venous disease, the use of compression hosiery is recommended.	I	B

MANAGEMENT OF CVD PATIENTS WITH SPECIAL PATIENT CHARACTERISTICS (3)

Patients on anticoagulants:

Recommendation	Class	Level
For patients with chronic venous disease, who are on anticoagulants and scheduled to undergo endovenous thermal ablation, interruption of anticoagulation is not recommended.	III	C

THANK YOU!

Guideline writing committee @ kick-off meeting, Nov 2019 Amsterdam