日本静脈学会/日本血管外科学会合同日本語訳「ヨーロッパ血管外科学会・下肢慢性静脈疾患診療ガイドライン（2022年版）要約」

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（日血外会誌2023; **32**: 211–256）

索引用語：ガイドライン，慢性静脈疾患，下肢静脈瘤，深部静脈血栓症，静脈血栓後症候群

はじめに

今回，日本語訳を行ったのは，2015年に発表されたヨーロッパ血管外科学会（European Society for Vascular Surgery: ESVS）の慢性静脈疾患（chronic venous disease: CVD）ガイドラインの2022年改訂版（CVDガイドライン）[503]の要約である．本ガイドラインは，ESVSのガイドライン執筆委員会によって作成された下肢のCVD患者の診療に関するガイドラインであり，European Journal of Vascular and Endovascular Surgery（EJVES）編集委員会およびESVSガイドライン委員会によって査読，承認されている．

本日本語訳は，日本静脈学会および日本血管外科学会の合同事業として，両学会会員より選出された翻訳者が合同で翻訳を行った．作成した日本語訳は，静脈学および日本血管外科学会雑誌の編集委員による合同査読委員会が査読を行った後，ESVSに提出，掲載の許諾後に両雑誌に同じ日本語訳が掲載されている．なお，翻訳内容の担保のための逆翻訳は行わなかった．

CVDガイドラインは，本文84頁（94の推奨を含む）と膨大な量であるため，推奨，図表および最低限の本文を要約して翻訳を行った．あくまでも要約であるため，本日本語訳の内容を引用する際は必ず英文の原著論文[503]を引用して頂きたい．なお，本日本語訳中の参考文献は原著論文の参考文献リストをそのまま用いているため，参考文献番号は連番ではないことに留意されたい．

CVDガイドラインの内容は，腹部・骨盤部～下肢のCVDに関する診断，検査，治療方針の決定，保存的治療，侵襲的治療等，広範囲にわたっている．われわれは，本日本語訳がわが国におけるCVD診療の質の向上に繋がることを期待する．最後に，初めての試みである両学会合同のCVDガイドライン翻訳事業に協力してくれた両学会の翻訳者，査読者各位と日本語翻訳版の転載を許諾して頂いたESVSに深謝する．

2022年版と2015年版CVDガイドラインの違い

2022年版では新たに推奨を追加し，2015年版の推奨の推奨度を一部変更している（**図1, 2**）．

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〒101–0062　東京都千代田区神田駿河台4–1–1ウエルトンビル6階
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受付：2023年3月31日　受理：2023年3月31日
doi: 10.11401/jsvs.23-00031

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11. 臨床分類C4bの慢性静脈疾患 (CVD) 患者に対する膝下弾性ストッキング (ECS)
15. 有症状の静脈瘤 (VV (C2)) を伴うCVD患者に対する侵襲的治療
17. 皮膚変化 (C4–C6) を伴う CVD 患者に対する侵襲的治療
18. 表在静脈弁不全に対する外来治療
19. 血管内焼灼術 (EVTA) のための超音波ガイド下膨潤麻酔[訳注1)]
24. 表在静脈侵襲的治療後の術後圧迫療法の期間は症例ごとに決定
25. 表在静脈侵襲的治療後の患者における静脈血栓塞栓症 (VTE) のリスク評価
29. EVTAデバイスの選択は術者の裁量に委ねる
32. 超音波ガイド下フォーム硬化療法
38. 網目状静脈瘤または毛細血管拡張症 (C1) 患者における下肢静脈のデュプレックス超音波検査 (DUS)
39. CEAP分類C1 患者では，小さな静脈よりも先に大きな不全静脈を治療する
40. 網目状静脈瘤に対する治療の第一選択としての硬化療法
45. 下腿中央部から遠位部の小伏在静脈 (SSV) にカニュレーションする場合には腓腹神経の損傷に留意する
62. 腸骨静脈流出路通過障害に対する血管内治療または外科的再建後のDUS サーベイランス
63. 集学的チームによる腸骨静脈流出路通過障害患者の管理
68. 活動性静脈性下腿潰瘍 (VLU) 患者に対する動脈の客観的評価
76. 活動性VLU患者における，治癒を促進するための早期血管内焼灼術
77. 治癒後VLU患者における，VLUの再発を減らすための表在静脈治療
79. 活動性または治癒後 VLU 患者においては，深部静脈弁不全があっても表在静脈を治療する
83. 骨盤痛があり骨盤静脈疾患 (PeVD) を臨床的に疑う女性患者では，他の痛みの原因疾患を除外する
84. 骨盤由来の可能性がある有症状のVVs患者における骨盤からのエスケープポイントの詳細なDUS
89. 表在静脈からの誘因のない急性出血患者に対する，早期の評価のための専門医への紹介
93. CVD の症状/徴候を伴う妊婦の弾性ストッキング

4. 鼠径部中枢側の病変が疑われる場合の初期評価の一部としての腹部DUS
8. CVD患者の静脈症状を改善するための運動療法
12. 静脈血栓後症候群 (PTS) 患者の重症度軽減のための20–40 mmHg圧の膝下弾性ストッキング (ECS)
16. 浮腫 (C3) を呈する患者における治療計画前の浮腫の原因となる他疾患の考慮
20. 膨潤麻酔[訳注1)]への緩衝液の配合
26. 表在静脈侵襲的治療時の個々の症例に応じた血栓予防法
27. 表在静脈侵襲的治療後1–4週間目のDUSサーベイランス
30. 伏在静脈本幹弁不全に対するシアノアクリレート系接着材による血管内治療

35. EVTA適応外の場合の大伏在静脈 (GSV) に対するストリッピング
37. 治療が必要な不全穿通枝 (PV) に対するEVTA，切離術あるいは結紮術
41. 毛細血管拡張症に対する硬化療法
46. 治療が必要な前副伏在静脈 (AASV) 弁不全に対するEVTA
53. 直径12 mmを超える太いGSVに対するEVTA
57. 伏在静脈本幹弁不全を伴わない有症状の再発性VVsに対する超音波ガイド下フォーム硬化療法 (UGFS) および/または静脈瘤切除術
59. 腸骨静脈流出路通過障害に対する血管内治療をガイドするための血管内超音波検査 (IVUS)
65. 表在静脈と深部静脈弁不全を合併する場合の表在静脈弁不全治療
66. 血栓塞栓症の合併，嚢状瘤，20 mmを超える紡錘状瘤，または血栓を認める場合の膝窩静脈の静脈性血管瘤に対する外科治療
71. 潰瘍径が小さく，発症が最近のVLUに対する，圧迫圧40 mmHg以下の弾性ストッキングの重ね履き
75. VLU再発抑制のための，治癒後VLU患者に対する長期圧迫療法
78. VLU患者における潰瘍下静脈叢閉鎖のためのUGFS
81. 活動性または治癒後VLUおよび腸骨静脈流出路閉塞に対する静脈内ステント留置術
85. 骨盤静脈疾患が疑われる女性患者に対する腹部および/または経膣超音波検査
86. VVsおよび関連する骨盤からのエスケープポイントに対する局所治療
88. 骨盤症状がある骨盤由来VV患者に対する骨盤静脈塞栓術
90. 表在静脈急性出血後の局所フォーム硬化療法
91. 肥満CVD患者における静脈疾患予後改善のための減量
92. 肥満患者における治療が必要な伏在静脈弁不全に対する血管内焼灼術

13. PTS患者における重症度軽減のための補助的間欠的空気圧迫法
31. 径6 mm未満の伏在静脈本幹弁不全治療のためのUGFS
33. 伏在静脈本幹弁不全の治療におけるカテーテルを用いたフォーム硬化療法(膨潤麻酔[訳注1)]を伴う/伴わない)
34. 伏在静脈本幹弁不全に対するMOCA[訳注4)]
44. SSV本幹弁不全に対するnon-thermal non-tumescent閉鎖術
47. 治療が必要なAASV弁不全に対するUGFS
50. 臨床分類C4b，C5またはC6の下肢における不全PVの治療
54. 中枢側逆流の焼灼と同時または焼灼後に行う足部・足首VVに対する治療
74. 動静脈性混合型潰瘍に対する綿密な管理下での調整圧迫療法
80. 表在静脈とPV弁不全による活動性VLUに対する本幹およびPVの同時治療

49. 皮膚変化のない下肢静脈瘤患者における下腿不全PVへの治療は行わない
61. 重篤な症状がない腸骨静脈流出障害に対して血管内治療や外科的治療は行わない
72. 足関節血圧60 mmHg未満，足趾血圧30 mmHg未満または足関節上腕血圧比 (ABI) 0.6未満の場合はVLUに対する持続的圧迫は行わない
87. 骨盤症状がない骨盤由来のVVs患者には骨盤静脈塞栓術は行わない
94. EVTAを施行する際に抗凝固療法は休止しない

■クラスI　■クラスIIa　■クラスIIb　■クラスIII

図1　ヨーロッパ血管外科学会・下肢慢性静脈疾患診療ガイドラインにおいて2015年版と比較して2022年版で新しく追加された推奨事項.
番号はガイドライン文書の推奨事項の番号に対応する
AASV = anterior accessory saphenous vein; ABI = ankle brachial index; CEAP = Clinical Etiological Anatomical Pathophysiological; CVD = chronic venous disease; DUS = duplex ultrasound; ECS = elastic compression stockings; EVTA = endovenous thermal ablation; GSV = great saphenous vein; IVU = intravascular ultrasound; MOCA = mechanochemical ablation; PTS = post-thrombotic syndrome; PeVD = pelvic venous disorders; PV = perforating vein; SSV = small saphenous vein; UGFS = ultrasound-guided foam sclerotherapy; VTE = venous thromboembolism; VV = varicose vein; VLU = venous leg ulcer

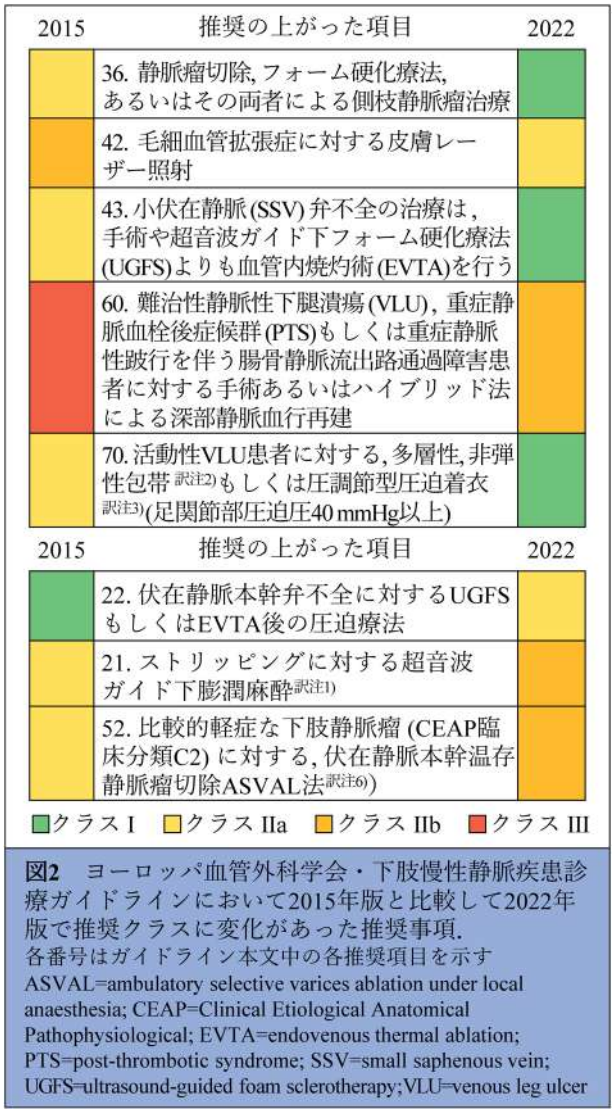

図2　ヨーロッパ血管外科学会・下肢慢性静脈疾患診療ガイドラインにおいて2015年版と比較して2022年版で推奨クラスに変化があった推奨事項.
各番号はガイドライン本文中の各推奨項目を示す
ASVAL=ambulatory selective varices ablation under local anaesthesia; CEAP=Clinical Etiological Anatomical Pathophysiological; EVTA=endovenous thermal ablation; PTS=post-thrombotic syndrome; SSV=small saphenous vein; UGFS=ultrasound-guided foam sclerotherapy;VLU=venous leg ulcer

表1　欧州心臓病学会 (European Society of Cardiology: ESC) によるエビデンスのレベル

エビデンスレベルA	複数のランダム化臨床試験またはメタ解析から得られたデータ
エビデンスレベルB	単一のランダム化臨床試験または大規模な非ランダム化試験から得られたデータ
エビデンスレベルC	専門家の意見のコンセンサスおよび/または小規模研究, 後方視的研究, およびレジストリのデータ

表2　欧州心臓病学会 (European Society of Cardiology: ESC)による推奨クラス

推奨クラス	定義
クラス I	当該の治療や手技が有益・有効であることを証明するエビデンスが存在および/またはコンセンサスが形成されている
クラス II	当該の治療や手技が有益・有効であることを示す相反するエビデンスが存在および/または意見の相違が認められる
クラスIIa	エビデンスの重みや意見が当該治療の有益性・有効性を示唆している
クラスIIb	有益性・有効性を示すエビデンスや意見が不十分
クラス III	当該の治療や手技が有益・有効ではないことを証明するエビデンスが存在する, またはコンセンサスが形成されており, 場合によっては有害である可能性がある

序　文

本ガイドラインは，2015年に出版されたESVSのCVD診療ガイドラインをアップデートしたものである．対象は，下肢の表在静脈，穿通枝，深部静脈，および腹部・骨盤部の静脈疾患であり，下肢CVDに関連しない静脈疾患，および血管奇形は対象としない．エビデンス収集は，MEDLINE（PubMed経由），Embase, Cardiosource Clinical Trials DatabaseおよびThe Cochrane Libraryの4つのデータベースを2013年1月1日～2020年6月30日の範囲で検索し，必要に応じて2021年6月までの範囲で2次および3次の文献検索を行った．エビデンスレベルおよび推奨度の評価は，ヨーロッパ心臓病学会（European Society of Cardiology: ESC）の評価法によって決定した（**表1, 2**）．推奨度を決定するために採用した論文は，各々の推奨ごとにエビデンス表（Tables of Evidence: ToEs）にまとめ，補足資料としてオンラインで公開している（https://doi.org/10.1016/j.ejvs.2021.12.024）．

1.　一般的事項（推奨1, 2）

CVDの病態の記述には，Clinical, Etiological, Anatomical, Pathophysiological（CEAP）分類が広く用いられている（**表3**）．本ガイドラインにおける解剖学用語およびその略語は，2020年改訂版のCEAP分類に準拠する（**表4**）．代表的な下肢の深部静脈および表在静脈は**図3, 4**に示す．CVDの病態の経時的変化を評価する臨床スコアリングシステムとして，改訂版静脈疾患臨床重症度スコア（revised Venous Clinical Severity Score: r-VCSS）（**表5**）が，静脈血栓後症候群（post-thrombotic syndrome: PTS）の病態評価にはVillaltaスケール（**表6**）が広く用いられている．

推奨 1	変更なし
慢性静脈疾患患者の臨床データ調査と研究において，Clinical, Etiological, Anatomical, Pathophysiological（CEAP）分類を使用する	
クラス	レベル　参考文献
I	C　コンセンサス

推奨 2	変更なし
慢性静脈疾患患者の臨床データ調査と研究では，改訂版静脈疾患臨床重症度スコア（r-VCSS）と静脈血栓後症候群の Villalta スケールを用いた，臨床重症度および治療効果の等級付けを考慮する	
クラス	レベル　参考文献
IIa	C　コンセンサス

r-VCSS= revised Venous Clinical Severity Score

表 3　2020年改訂版CEAP (Clinical Etiological Anatomical Pathophysiological)分類[6)]

クラス	詳細
臨床（Clinical: C）分類	
C0	視診触診上，静脈疾患の徴候なし
C1	毛細血管拡張あるいは網目状静脈瘤
C2	静脈瘤
C2r	再発性静脈瘤
C3	浮腫
C4	慢性静脈疾患（CVD）に伴う二次性の皮膚・皮下組織病変
C4a	色素沈着，湿疹
C4b	脂肪皮膚硬化症，白色萎縮
C4c	静脈拡張冠（冠状静脈拡張）
C5	治癒した潰瘍
C6	活動性潰瘍
C6r	再発性活動性潰瘍
症状の有無: 下付で‘S’または‘A’を記載	S: 有症状（疼痛，こわばり，皮膚炎，重さ，こむら返り，その他の静脈機能障害に伴う症状） A: 無症状
病因（Etiological: E）分類	
Ep	一次性
Es	二次性
Esi	二次性–静脈内原因による
Ese	二次性–静脈外原因による
Ec	先天性
En	静脈性の原因が同定されていない
解剖（Anatomical: A）分類	
As	表在静脈
Ad	深部静脈
Ap	穿通枝
An	静脈の部位が同定されていない
病態生理（Pathophysiological: P）分類	
Pr	逆流
Po	狭窄・閉塞
Pr,o	逆流及び通過障害の併存
Pn	病態生理学的静脈異常が同定されない

*病態生理分類には病態に該当する部位を記載する（**表 4**を参照）　CVD = chronic venous disease

表4　2020年改訂版CEAP (Clinical Etiological Anatomical Pathophysiological) 分類：解剖学的分類のまとめ[6]

解剖学的分類	セグメント番号*	新しい解剖学的部位†	詳細
As (表在)	1	Tel	毛細血管拡張
	1	Ret	網目状静脈
	2	GSVa	膝上部大伏在静脈
	3	GSVb	膝下部大伏在静脈
	4	SSV	小伏在静脈
	−	AASV	前副伏在静脈
	5	NSC	非伏在静脈
Ad (深部)	6	IVC	下大静脈
	7	CIV	総腸骨静脈
	8	IIV	内腸骨静脈
	9	EIV	外腸骨静脈
	10	PELV	骨盤静脈
	11	CFV	総大腿静脈
	12	DFV	大腿深静脈
	13	FV	大腿静脈
	14	POPV	膝窩静脈
	15	TIBV	脛骨静脈
	15	PRV	腓骨静脈
	15	ATV	前脛骨静脈
	15	PTV	後脛骨静脈
	16	MUSV	下腿筋肉枝
	16	GAV	腓腹静脈
	16	SOV	ヒラメ静脈
Ap（穿通枝）	17	TPV	大腿部穿通枝
	18	CPV	下腿部穿通枝
An（静脈の解剖学的位置識別不能）			

*2004年版CEAP分類[5]の解剖学的セグメント番号
† 病態生理 (P) クラスに対応する解剖学的位置を識別するための新しい特異的な解剖学的分類を記載

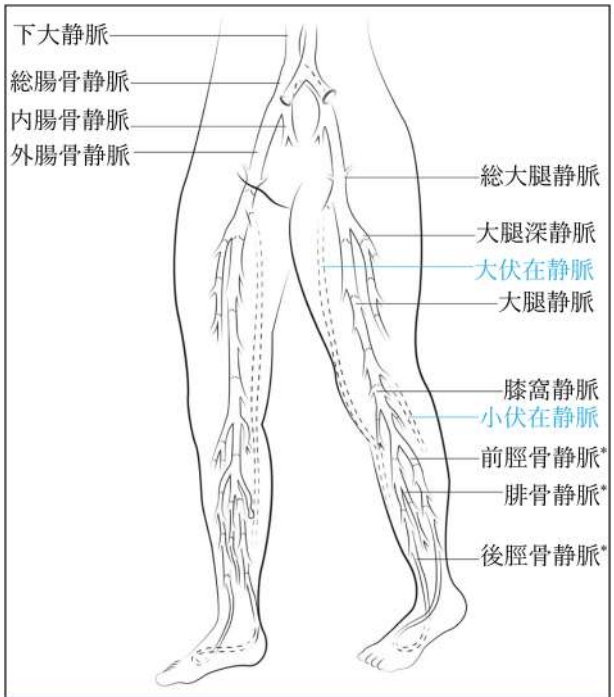

図3　下肢の深部静脈および主な表在静脈（大伏在静脈・小伏在静脈）の解剖.
*通常は2本ずつ存在

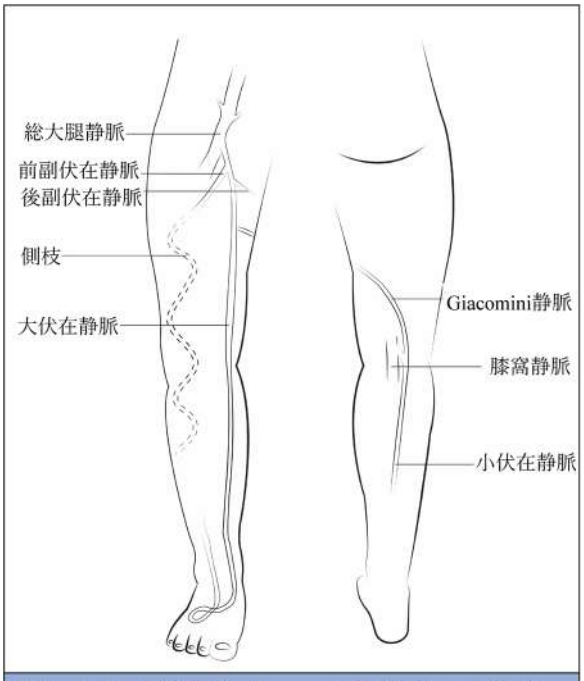

図4　主な副伏在静脈とGiacomini静脈（大伏在静脈と小伏在静脈を連絡する伏在静脈間静脈）の解剖.
Giacomini静脈が存在する場合は，伏在膝窩静脈接合部が存在しない場合もある

表5　改訂版静脈疾患臨床重症度スコア (r-VCSS) [35]

要素	説明(点数)			
	なし(0)	軽度(1)	中等度(2)	重度(3)
痛み*，あるいは潰瘍の不快感	なし	時々	毎日，日常生活の支障になるが，妨げにはならない	毎日，ほとんどの日常生活が制限される
静脈瘤	なし	少数，散在性，冠状静脈拡張症	下腿，あるいは大腿のどちらかに限局	下腿と大腿の両方に存在
静脈性浮腫	なし	足部と足首に限局	足首より頭側まで及ぶが膝下に限局	膝あるいは膝上まで及ぶ
皮膚の色素沈着	なし，あるいは巣状	内踝・外踝の周囲に限局	下腿遠位1/3に広がる	より広範囲 (下腿遠位1/3を越えて頭側まで及ぶ)
炎症	なし	内踝・外踝の周囲に限局	下腿遠位1/3に広がる	より広範囲 (下腿遠位1/3を越えて頭側まで及ぶ)
皮膚硬化	なし	内踝・外踝の周囲に限局	下腿遠位1/3を含む	下腿遠位1/3を越えた部位を含む
活動性潰瘍の数	なし	1個	2個	2個を超える
活動性潰瘍の罹患期間	なし	3カ月未満	3カ月−1年	1年を超える
活動性潰瘍の大きさ	なし	直径2 cm未満	直径2−6 cm	直径6 cmを超える
圧迫療法	不使用	弾性ストッキングを時々使用	弾性ストッキングをほぼ毎日使用	弾性ストッキングを毎日指示どおりに使用

*静脈由来と推定される痛み，重さ，倦怠感，ヒリヒリ感，灼熱感
r-VCSS = revised Venous Clinical Severity Score

表6 静脈血栓後症候群 (post-thrombotic syndrome: PTS) に対するVillaltaスケール[37]とその解説

臨床所見*	なし	軽度	中等度	重度
症状				
疼痛	0	1	2	3
こむら返り	0	1	2	3
重さ	0	1	2	3
掻痒感	0	1	2	3
知覚鈍麻	0	1	2	3
徴候				
浮腫	0	1	2	3
硬結	0	1	2	3
色素沈着	0	1	2	3
静脈拡張	0	1	2	3
発赤	0	1	2	3
ふくらはぎの圧痛	0	1	2	3
静脈血栓後症候群重症度の解釈				
Villaltaスコア	5未満	5–9	10–14	スコア14を超える，あるいは静脈性潰瘍

*各項目はスコア0から3があり，それぞれ，なし，軽度，中等度，重度を表し，最高スコアは33となる

2. 検査方法（推奨3–7）

本章では，CVD患者に対する検査方法について解説する．主な診断と治療のアルゴリズムは**図5**に示す．

推奨 3			変更なし
慢性静脈疾患が疑われる患者，または臨床的に明らかな慢性静脈疾患患者の診断および治療計画のために，最初の画像診断法として下肢全体の静脈デュプレックス超音波検査を行う			
クラス	レベル	参考文献	エビデンス表あり
I	B	Blomgren et al. (2011)[43]	

推奨 4			新規
鼠径上静脈通過障害が疑われる患者に対して，初期評価の一環として，下肢全体のデュプレックス超音波検査に加えて，腹部および骨盤静脈の超音波検査を考慮する			
クラス	レベル	参考文献	エビデンス表あり
IIa	C	Metzger et al. (2016)[51]	

推奨 5			変更なし
鼠径上静脈通過障害が疑われる患者に侵襲的治療を検討する場合，デュプレックス超音波検査に加えて，MRV または CT による断層撮影法を行う			
クラス	レベル	参考文献	エビデンス表あり
I	C	Coelho et al. (2019)[56]	

MRV=magnetic resonance venography, CT=computed tomography

推奨 6		変更なし
鼠径上静脈通過障害が疑われる一部の患者で，断層撮影診断が不十分または施行できない部位は，静脈造影および/または血管内超音波検査を考慮してもよい		
クラス	レベル	参考文献
IIb	B	Gagne et al. (2017)[58], Lau et al. (2019)[57]

推奨 7			変更なし
慢性静脈疾患患者において，特にデュプレックス超音波検査の結果が臨床所見と一致しない場合，逆流および/または通過障害の定量化のために空気容積脈波法を考慮してもよい			
クラス	レベル	参考文献	エビデンス表あり
IIb	C	Lattimer et al. (2016)[59], Lattimer et al. (2017)[61], Raju et al. (2019)[60], Lattimer et al. (2019)[63], Kalodiki et al. (2019)[64]	

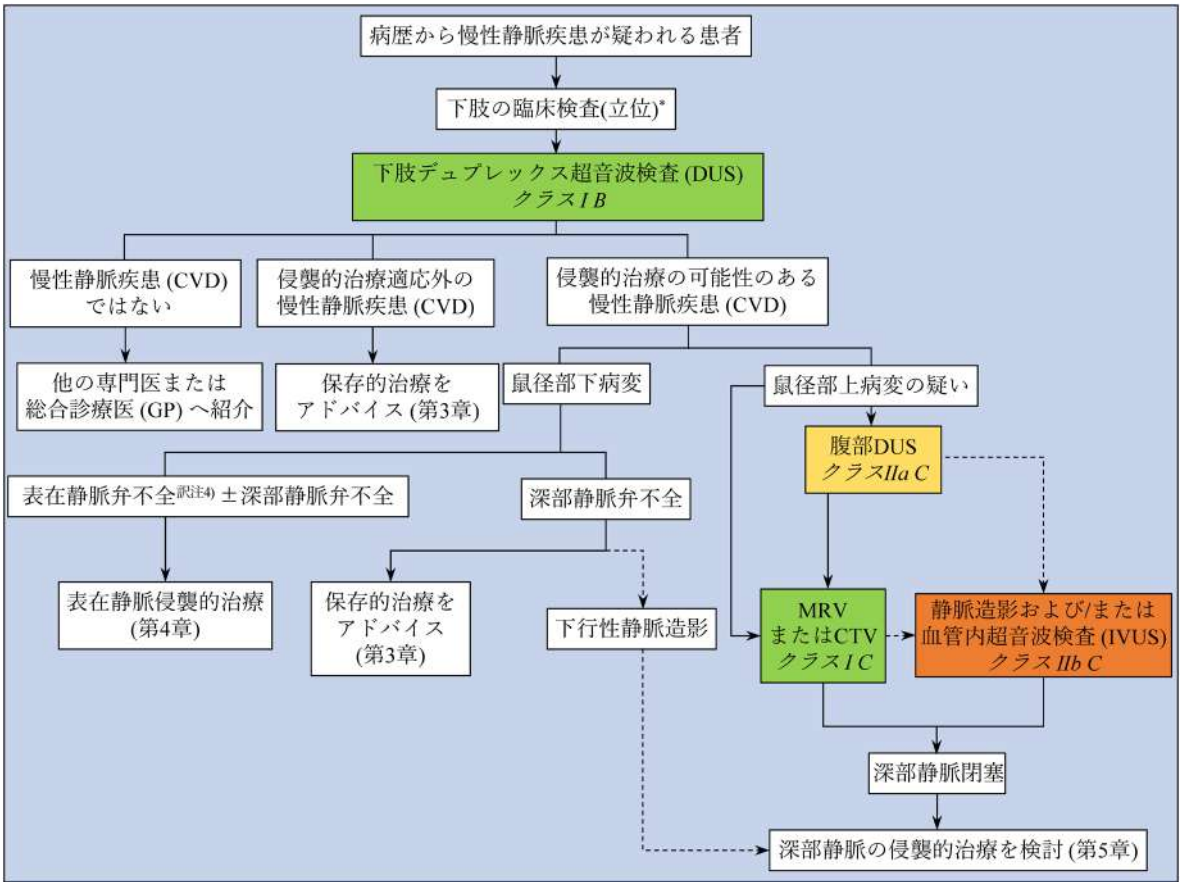

図5　下肢慢性静脈疾患 (CVD) が疑われる患者に対する主な診断方針と主な治療方針．
有症状の静脈瘤および臨床的に骨盤静脈疾患を疑う患者は，このフローチャートには含まれていない (**図15**参照)
*臨床検査には，特に腸骨静脈または下大静脈の閉塞が疑われる場合，腹部で潜在的側副血行路の検査が含まれる
CVD = chronic venous disease; DUS = duplex ultrasound; GP = general practitioner; MRV = magnetic resonance venography; CTV = computed tomography venography; IVUS = intravascular ultrasound

3. 保存的治療（推奨8–14）

本章では，活動性静脈性潰瘍を有しないCVD患者の保存的治療について解説する．活動性静脈性潰瘍を有する場合の保存的治療については第6章を参照．圧迫療法の禁忌を**表7**，主な静脈作動薬（venoactive drugs: VADs）の効果を**表8**，保存的治療の治療方針を**図6**に示す．

推奨 8 新規

有症状の慢性静脈疾患患者に対して，静脈うっ滞症状を軽減するために運動を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Kahn et al. (2011)[70], Araujo et al. (2016)[66], Gurdal Karakelle et al. (2021)[68]	

推奨 9 変更なし

有症状の慢性静脈疾患患者に対して，静脈うっ滞症状を軽減するために，足関節部に少なくとも 15 mmHg の圧力をかける弾性ストッキングを使用する

クラス	レベル	参考文献	エビデンス表あり
I	B	Benigni et al. (2003)[75], Kakkos et al. (2018)[76]	

推奨 10 変更なし

浮腫（CEAP 臨床分類 C3）を伴う慢性静脈疾患患者に対して，浮腫軽減のために，膝下弾性ストッキング，非弾性包帯[訳注2]または圧調節型圧迫着衣[訳注3]を用いて，足関節部圧迫圧 20–40 mmHg で圧迫を行う

クラス	レベル	参考文献	エビデンス表あり
I	B	Mosti et al. (2012)[77], Mosti et al. (2013)[82], Mosti et al. (2015)[79]	

CEAP = Clinical Etiological Anatomical Pathophysiological (classification)

推奨 11 新規

脂肪皮膚硬化症および/または白色萎縮（CEAP 臨床分類 C4b）を伴う慢性静脈疾患患者に対して，皮膚硬結を軽減するために，膝下弾性ストッキングを用いて足関節部圧迫圧 20–40 mmHg で圧迫を行う

クラス	レベル	参考文献	エビデンス表あり
I	B	Vandongen et al. (2000)[84]	

CEAP = Clinical Etiological Anatomical Pathophysiological (classification)

推奨 12 新規

静脈血栓後症候群患者に対して，重症度軽減のために膝下弾性ストッキングを用いて足関節部圧迫圧 20–40 mmHg での圧迫を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Azirar et al. (2019)[96]	

推奨 13 新規

静脈血栓後症候群患者に対して，重症度軽減のために補助的間欠的空気圧迫法を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	B	Azirar et al. (2019)[96]	

推奨 14			変更なし
有症状の慢性静脈疾患患者において，侵襲的治療を施行しない，待機している，または侵襲的治療後も症状および/または浮腫が持続している場合は，静脈うっ滞症状と浮腫軽減のために，薬剤ごとのエビデンスに基づいて静脈作動薬の投与を考慮する			
クラス	レベル	参考文献	エビデンス表あり
IIa	A	Ciapponi et al. (2004)[109], Kalus et al. (2004)[117], Flota-Cervera et al. (2008)[110], Martinez-Zapata et al. (2008)[111], Rabe et al. (2011)[113], Rabe et al. (2011)[118], Pittler et al. (2012)[114], Aziz et al. (2015)[115], Rabe et al. (2016)[112], Kakkos et al. (2017)[107], Kakkos et al. (2018)[108], Bignamini et al. (2020)[119]	

表 7　圧迫療法の禁忌
(Rabe et al., 2020[74]から許可を得て改変)

足関節上腕血圧比 (ABI) 0.6未満および/または足関節血圧60 mmHg 未満の重症下肢動脈硬化疾患
圧迫部位に非解剖学的バイパスまたは体表下の動脈バイパスが存在
NYHA心機能分類クラスIVの重症心不全
NYHA心機能分類クラスIII心不全に対する，臨床的・血行動態的なモニタリング無しのルーチンの圧迫装具の使用
圧迫材料に対する確認されたアレルギー
感覚消失を伴う重症糖尿病性神経障害または皮膚壊死のリスクを伴う微小血管障害*

ABI = ankle brachial index; NYHA = New York Heart Association; NYHA心機能分類クラスIV: 安静時に倦怠感，動悸，呼吸困難および/または狭心痛が存在する; NYHA心機能分類クラスIII: 日常的な身体活動で過度な倦怠感，動悸，呼吸困難および/または狭心痛を生じるが，安静時には生じない
*持続する圧迫圧が低圧である非伸縮性圧迫法の場合は，禁忌が適応されない場合がある(調整圧迫療法)

表8　静脈の症状と浮腫に対する主な静脈作動薬の効果の全体的なまとめ

症状もしくは徴候	ルスカス抽出物[107]	微粉化精製フラボノイド画分(MPFF)[108]	ドペシル酸カルシウム[109–113]	セイヨウトチノキ抽出物[114]	ヒドロキシエチルルトシド[115]	レッドバイン抽出物[116–118]	スロデキシド[119]
疼痛	+	+	+	+	+	+	+
重さ	+	+	+		+		+
倦怠感	+		+				
腫脹感	+	+					+
こむら返り	+	+	+		+		+
感覚異常	+	+	+				
掻痒感			+	+			
浮腫	+	+	+	+		+	

MPFF = micronized purified flavonoid fraction

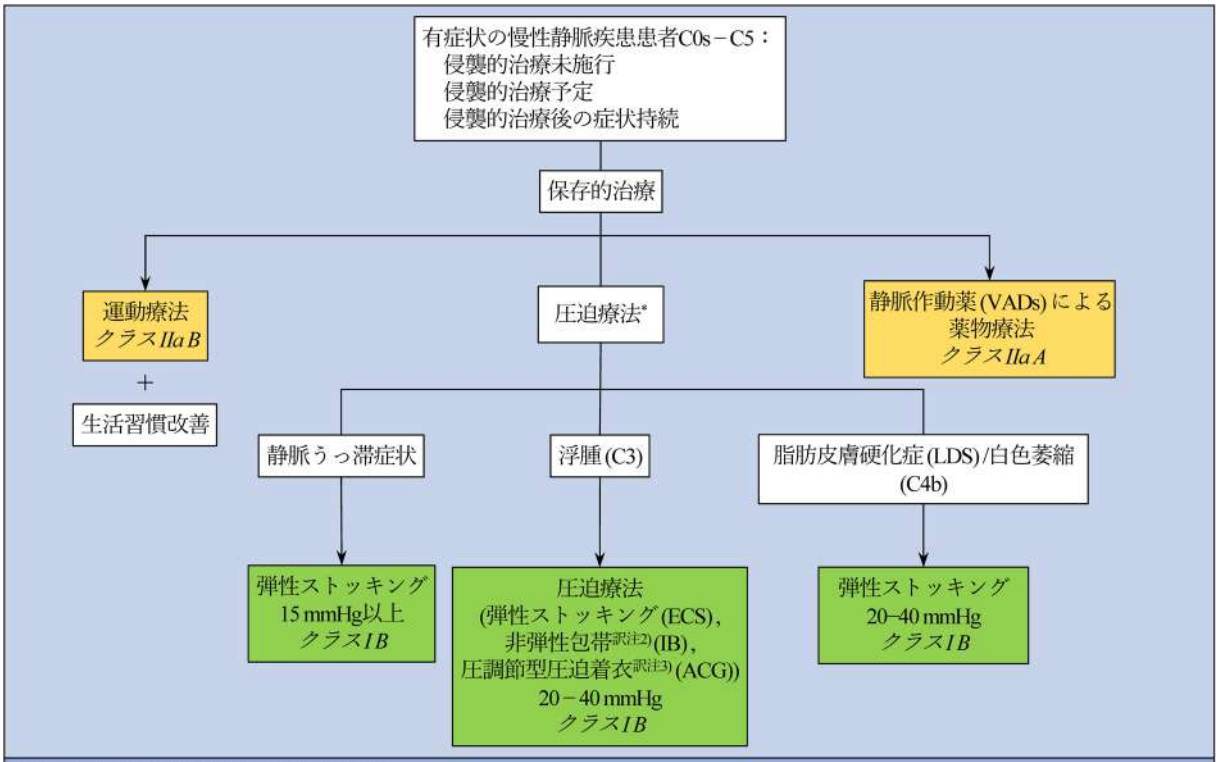

図6　下肢慢性静脈疾患の保存的治療.
*圧迫療法は，足関節血圧が60 mmHgを超え，足関節上腕血圧比 (ABI) が0.6を超えていることが必要
LDS = lipodermatosclerosis; ECS = elastic compression stockings; IB = inelastic bandages; ACG = adjustable compression garments; VADs = venoactive drugs; ABI = ankle brachial index

4.　表在静脈弁不全に対する侵襲的治療（推奨15–57）

本章では，表在静脈不全によるCVDの治療について解説する．表在静脈不全には伏在型，側枝型，網目状およびクモの巣状静脈瘤を含む．不全穿通枝に対する治療についても本章で解説する．

血管内焼灼術後の血栓性合併症であるendothermal heat induced thrombosis（EHIT）分類を**表9**，伏在型静脈本幹弁不全に対する治療法のまとめを**表10**に示す．側枝弁不全を伴う伏在静脈弁本幹不全患者に対する侵襲的治療の選択肢を**図7**（大伏在静脈弁不全），**図8**（小伏在静脈弁不全），**図9**（前副伏在静脈弁不全）に示す．再発性静脈瘤の主な原因を**表11**に示す．

推奨 15　新 規

有症状の静脈瘤を伴う表在静脈弁不全訳注4)患者（CEAP 臨床分類 C2s）に対して，侵襲的治療を行う

クラス	レベル	参考文献	エビデンス表あり
I	B	Michaels et al. (2006)[122]	

CEAP= Clinical Etiological Anatomical Pathophysiological (classification)

推奨 16　新 規

浮腫を伴う表在静脈弁不全患者（CEAP 臨床分類 C3）に対し，侵襲的治療の計画前に，浮腫の原因となる非静脈疾患の除外を考慮する

クラス	レベル	参考文献
IIa	C	コンセンサス

CEAP = Clinical Etiological Anatomical Pathophysiological (classification)

推奨 17　新 規

慢性静脈疾患による皮膚変化を伴う表在静脈弁不全[訳注4)]患者（CEAP 臨床分類 C4–C6）に対し，静脈弁不全に対する侵襲的治療を行う

クラス	レベル	参考文献
I	C	コンセンサス

CEAP = Clinical Etiological Anatomical Pathophysiological (classification)

推奨 18　新 規

静脈瘤切除併施の有無に関わらず，表在静脈弁不全[訳注4)]患者に対する血管内治療は可能であれば外来手術で施行する

クラス	レベル	参考文献
I	C	コンセンサス

推奨 19　新 規

表在静脈弁不全[訳注4)]患者に対する血管内焼灼術は，超音波ガイド下膨潤麻酔[訳注1)]で施行する

クラス	レベル	参考文献
I	C	コンセンサス

推奨 20　新 規

表在静脈弁不全[訳注4)]患者に対する膨潤麻酔[訳注1)]下の治療では，術中の疼痛軽減のため麻酔液に緩衝液の配合を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Nandhra et al. (2018)[138)]	

推奨 21　変更あり

表在静脈弁不全[訳注4)]患者に対するストリッピングでは，全身麻酔や区域麻酔の代替として，超音波ガイド下膨潤麻酔[訳注1)]を考慮してもよい

クラス	レベル	参考文献
IIb	C	コンセンサス

推奨 22　変更あり

表在静脈弁不全[訳注4)]患者に対する伏在静脈本幹の超音波ガイド下フォーム硬化療法や血管内焼灼術では，術後の圧迫療法を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	A	Hamel-Desnos et al. (2010)[149)], Cavezzi et al. (2019)[148)], Bootun et al. (2021)[151)], Chou et al. (2019)[155)], Pihlaja et al. (2020)[153)], Onwudike et al. (2020)[152)]	

推奨 23　変更なし

表在静脈弁不全[訳注4)]患者に対するストリッピングや広範囲の静脈瘤切除術では，術直後から圧迫療法を行う

クラス	レベル	参考文献	エビデンス表あり
I	A	Huang et al. (2013)[146)], Bootun et al. (2021)[151)]	

推奨 24　新 規

表在静脈弁不全[訳注4)]患者に対する侵襲的治療後の，局所合併症の最小化を目的とした圧迫療法の期間は，症例ごとに決定する

クラス	レベル	参考文献
I	A	Huang et al. (2013)[146)], Chou et al. (2019)[155)]

推奨 25　新 規

侵襲的治療を行う表在静脈弁不全[訳注4)]患者に対して，静脈血栓塞栓症のリスク評価を行う

クラス	レベル	参考文献
I	C	コンセンサス

推奨 26 新規

表在静脈弁不全[訳注4)]患者に対して侵襲的治療を行う場合は，個々の症例に応じた血栓予防法を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	San Noberto et al. (2013)[157], Wang et al. (2015)[156]	

推奨 27 新規

表在静脈弁不全[訳注4)]患者に対して伏在静脈本幹の治療を行う場合は，術後1〜4週間目でのデュプレックス超音波検査によるサーベイランスを考慮する

クラス	レベル	参考文献
IIa	C	コンセンサス

推奨 28 変更なし

治療を必要とする大伏在静脈弁不全患者に対する治療は，ストリッピングや超音波ガイド下フォーム硬化療法よりも，血管内焼灼術を第一選択とする

クラス	レベル	参考文献	エビデンス表あり
I	A	Siribumrungwong et al. (2012)[198], Rasmussen et al. (2013)[175], Hamann et al. (2017)[201], Kheirelseid et al. (2018)[202], Brittenden et al. (2019)[129], Cao et al. (2019)[195]	

推奨 29 新規

伏在静脈本幹弁不全患者に対して血管内焼灼術を行う場合，デバイス選択は術者の裁量に委ねる

クラス	レベル	参考文献
I	B	Malskat et al. (2019)[173]

推奨 30 新規

治療を必要とする大伏在静脈弁不全患者で，NTNT治療のほうが適切な場合には，シアノアクリレート系接着材による血管内治療（CAC）を考慮する

クラス	レベル	参考文献
IIa	A	Vos et al. (2017)[213], Cahk et al. (2019)[206], Eroglu et al. (2018)[208], Gibson et al. (2019)[234], Morrison et al. (2020)[215], Garcia-Carpintero et al. (2020)[209]

NTNT = non-thermal non-tumescent, CAC = cyanoacrylate closure

推奨 31 新規

伏在静脈本幹径が6 mm未満の伏在静脈本幹弁不全患者に対して，超音波ガイド下フォーム硬化療法を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	B	Myers et al. (2017)[164], Shadid et al. (2015)[221], Venermo et al. (2016)[222]	

推奨 32 新規

表在静脈弁不全[訳注4)]患者に対するフォーム硬化療法は，超音波ガイド下で行う

クラス	レベル	参考文献
I	C	コンセンサス

推奨 33 新規

治療を必要とする大伏在静脈弁不全患者に対して，静脈周囲への膨潤麻酔[訳注1)]液を使用あるいは使用しないカテーテルを用いた本幹フォーム硬化療法を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	B	Lim et al. (2020)[224], Dos Santos et al. (2020)[225]	

推奨 34　新規

治療を必要とする大伏在静脈弁不全患者で NTNT 治療のほうが適切な場合は，MOCA [訳注 5)] を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	A	Vos et al. (2017)[213], Holewijn (2019)[229], Mohamed et al. (2021)[230], Vähäaho et al. (2021)[232]	

NTNT=non-thermal non-tumescent, MOCA=mechanochemical ablation

推奨 35　新規

治療を必要とする大伏在静脈弁不全患者で血管内焼灼術が施行できない場合は，ストリッピングを考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	A	O'Donnell et al. (2016)[177], Hamann et al. (2017)[201], Kheirelseid et al. (2018)[202]	

推奨 36　変更あり

慢性静脈疾患患者で側枝静脈瘤の治療が必要な場合は，外来静脈瘤切除術または超音波ガイド下フォーム硬化療法，あるいは両者を組み合わせて行う

クラス	レベル	参考文献	エビデンス表あり
I	B	de Roos et al. (2003)[245], Michaels et al. (2006)[243], Zhang et al. (2012)[242], Vasquez et al. (2017)[247]	

推奨 37　新規

慢性静脈疾患患者で不全穿通枝の治療が必要な場合は，不全穿通枝の血管内焼灼術あるいは切離・結紮術を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	C	Abdul-Haqq et al. (2013)[253], Kiguchi et al. (2014)[263], van Gent et al. (2015)[254], Gibson et al. (2020)[216]	

推奨 38　新規

網目状静脈瘤および/または毛細血管拡張症を呈する患者に対して，関連する不全静脈を検索する目的で，治療前に下肢静脈デュプレックス超音波検査を行う

クラス	レベル	参考文献	エビデンス表あり
I	C	Ruckley et al. (2012)[265]	

推奨 39　新規

網目状静脈瘤および/または毛細血管拡張症を呈する患者に対して，小静脈の治療前に，関連する重要な不全静脈を先行して治療する

クラス	レベル	参考文献
I	C	コンセンサス

推奨 40　新規

治療が計画されている網目状静脈瘤患者に対して，第一選択として硬化療法を行う

クラス	レベル	参考文献	エビデンス表あり
I	A	Hamel-Desnos et al. (2009)[219], Rabe et al. (2010)[266], Munia et al. (2012)[271], Zhang et al. (2012)[242], Parlar et al. (2015)[272], Bertanha et al. (2017)[269], Ianosi et al. (2019)[268]	

推奨 41 新 規

治療が計画されている毛細血管拡張症患者に対して，硬化療法を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	A	Hamel-Desnos et al. (2009)[219], Rabe et al. (2010)[266], Munia et al. (2012)[271], Zhang et al. (2012)[242], Parlar et al. (2015)[272], Ianosi et al. (2019)[268], Bertanha et al. (2021)[270]	

推奨 42 変更あり

治療が計画されている毛細血管拡張症患者に対して，皮膚レーザー照射療法を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Munia et al. (2012)[271], Parlar et al. (2015)[272], Ianosi et al. (2019)[268]	

推奨 43 変更なし

治療が必要な小伏在静脈弁不全患者に対して，手術やフォーム硬化療法よりも血管内焼灼術を行う

クラス	レベル	参考文献	エビデンス表あり
I	A	Duganci et al. (2011)[142], Paravastu et al. (2016)[293], Boersma et al. (2016)[288]	

推奨 44 新 規

治療が必要な小伏在静脈弁不全患者に対して，NTNT治療による下肢静脈瘤血管内閉鎖術を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	B	Boersma et al. (2016)[288], Lane et al. (2017)[231], Garcia-Carpintero et al. (2020)[209], Mohamed et al. (2021)[230]	

NTNT= non-thermal non-tumescent

推奨 45 新 規

小伏在静脈弁不全患者に対する血管内焼灼術において，穿刺が下腿中央部より遠位部の場合には腓腹神経の損傷に留意する

クラス	レベル	参考文献	エビデンス表あり
I	B	Dognanci et al. (2011)[142], Rodriguez-Acevedo et al. (2017)[294]	

推奨 46 新 規

治療が必要な前副伏在静脈弁不全患者に対して，血管内焼灼術を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	C	Theivacumar et al. (2009)[302], King et al. (2009)[303]	

推奨 47 新 規

治療が必要な前副伏在静脈弁不全患者に対して，超音波ガイド下フォーム硬化療法を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	C	Bradbury et al. (2010)[304]	

推奨 48　変更なし

伏在静脈本幹弁不全患者に対して焼灼あるいは非焼灼血管内治療を行う場合，共有意思決定[訳注 8)]の過程において，側枝静脈の治療を併施するかどうかについても考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Vasquez et al. (2017)[247], Gibson et al. (2019)[234], Watanabe et al. (2020)[311], Aherne et al. (2020)[309]	

推奨 49　新規

慢性静脈疾患に関連する皮膚変化を伴わない下肢静脈瘤患者の大部分では，下肢の不全穿通枝に対する治療は**推奨**されない

クラス	レベル	参考文献
III	C	コンセンサス

推奨 50　新規

進行した皮膚変化を有する患者（CEAP 臨床分類 C4b, C5 あるいは C6）に対して，孤立性あるいは残存する不全穿通枝が原因と考えられる場合は，穿通枝への治療を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	C	Abdul-Haqq et al. (2013)[253], Kiguchi et al. (2014)[263], Van Gent et al. (2015)[254], Gibson et al. (2020)[261]	

推奨 51　変更なし

治療が必要な表在静脈弁不全[訳注 4)]に対して，CHIVA 法[訳注 7)]の経験のある医師が行うのであれば CHIVA 法[訳注 7)]を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	B	Bellmunt-Montoya et al. (2021)[322]	

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

推奨 52　変更あり

治療を要する比較的軽症な静脈瘤患者（CEAP 臨床分類 C2）に対して，伏在静脈本幹を温存した瘤切除術（ASVAL 法[訳注 6)]）を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	C	Pittaluga et al. (2009)[325], Biemans et al. (2014)[314], Richards et al. (2021)[326]	

CEAP = Clinical Etiological Anatomical Pathophysiological Classification; ASVAL = ambulatory selective varicose vein ablation under local anaesthesia

推奨 53　新規

本幹の径が非常に太い（12 mm を超える）大伏在静脈弁不全患者に対しては，血管内焼灼術を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	C	Dabbs et al. (2018)[327], Woo et al. (2019)[328]	

推奨 54 新規

足部，足首に静脈瘤を有する患者に対して，瘤切除術，硬化療法，足部の穿通枝結紮術を，中枢側逆流の焼灼術と併施，もしくは焼灼術後に考慮してもよい

クラス	レベル	参考文献 エビデンス表あり
IIb	C	De Roos et al. (1998)[332], Albernaz et al. (2018)[331]

推奨 55 変更なし

伏在静脈本幹弁不全による有症状の再発性静脈瘤患者に対し，瘤切除を併施する/あるいはしない血管内焼灼術あるいは超音波ガイド下硬化療法を考慮する

クラス	レベル	参考文献 エビデンス表あり
IIa	B	Hinchliffe et al. (2006)[351], Theivacumar et al. (2011)[352], van Groenendael et al. (2009)[349], van Groenendaelet al. (2010)[348], Nwaejike et al. (2010)[350], Darvall et al. (2011)[354]

推奨 56 変更なし

治療を要する有症状の再発性静脈瘤患者に対して，血管内焼灼術が可能な場合には鼠径や膝窩部の再切開は**推奨**されない

クラス	レベル	参考文献 エビデンス表あり
III	B	Hinchliffe et al. (2006)[351], van Groenendaal et al. (2009)[349], van Groenendaal et al. (2010)[348]

推奨 57 新規

本幹弁不全を伴わない有症状の再発性静脈瘤患者に対して，超音波ガイド下フォーム硬化療法および/または外来瘤切除を考慮する

クラス	レベル	参考文献
IIa	C	コンセンサス

表9 米国静脈フォーラムによる endothermal heat induced thrombosis (EHIT) 分類[188]

クラス	定義
I	血栓が深部静脈に達しない
	a. 浅腹壁静脈の末梢にとどまるもの
	b. 浅腹壁静脈の中枢から深部静脈接合部まで，深部静脈接合部を含む
II	血栓が隣接する深部静脈に達しているが，深部静脈内腔の50%未満にとどまる
III	血栓が隣接する深部静脈に達しており，深部静脈内腔の50%以上を構成する
IV	治療した表在静脈に連続した血栓により深部静脈が閉塞している

表10　伏在静脈本幹弁不全に対する各治療法の比較

手技	報告例の経過観察期間	逆流消失	生活の質 (QOL) 改善	膨潤麻酔[訳注1)]の必要性	下腿中央部から遠位部の神経障害リスク*
血管内焼灼術 (EVTA)	≧5年	+++	+++	あり	あり
ストリッピング (HLS)	≧5年	+++	+++	あり†	あり
シアノアクリレート系接着材による血管内治療 (CAC)	3–5年	+++	+++	なし	なし
超音波ガイド下フォーム硬化療法 (UGFS)	≧5年	+/++‡	++/+++‡	なし	なし
カテーテルを用いたフォーム硬化療法 (CDFS)	1年	++	++	あり/なし	なし
MOCA[訳注4)]	3年	++	+++	なし	なし

EVTA = endovenous thermal ablation; HLS = high ligation and stripping; CAC = cyanoacrylate adhesive closure; UGFS = ultrasound guided foam sclerotherapy; CDFS = catheter directed foam sclerotherapy; MOCA = mechanochemical ablation; QOL = quality of life
＋＋＋＝非常に有効である；＋＋＝有効である；＋＝いくらか効果あり（詳細は第4.1–4.3章参照）
*その他の合併症：詳細は第4.1–4.3章参照
†または他の麻酔法
‡本幹径6 mm未満

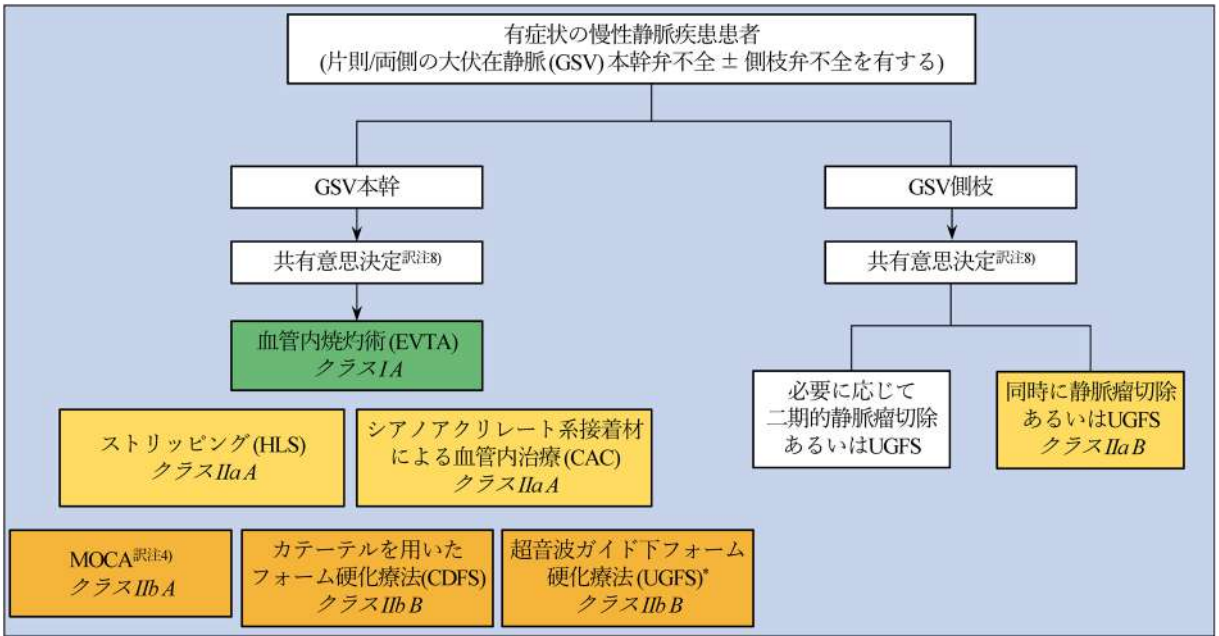

図7　有症状の大伏在静脈 (GSV) 弁不全患者に対する侵襲的治療の選択肢.
GSV本幹を温存する代替治療 (CHIVA法[訳注7)], ASVAL法[訳注6)]) はこのフローチャートに含まれない
*超音波ガイド下フォーム硬化療法 (UGFS) はGSV径が6 mm未満の症例のみ.
EVTA = endovenous thermal ablation; GSV = great saphenous vein; HLS = high ligation/stripping; CAC = cyanoacrylate closure; MOCA = mechanochemical ablation; CDFS = catheter-directed foam sclerotherapy; UGFS = ultrasound-guided foam sclerotherapy; CHIVA = ambulatory conservative haemodynamic treatment of venous incompetence in outpatients; ASVAL = ambulatory selective varices ablation under local anaesthesia

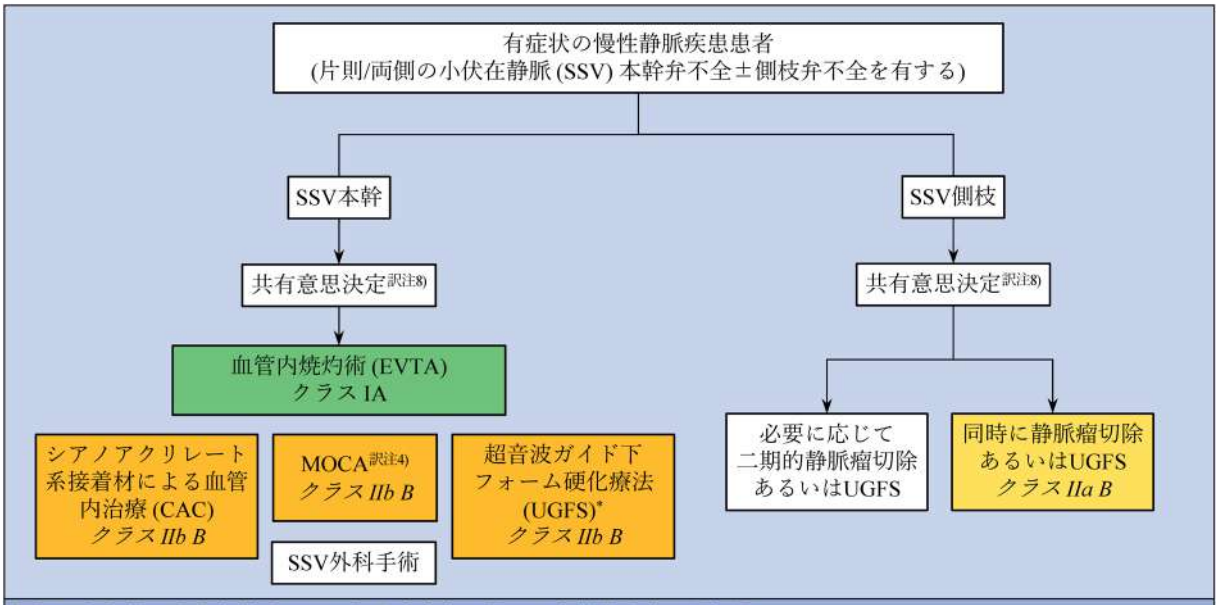

図 8　有症状の小伏在静脈 (SSV) 弁不全患者に対する侵襲的治療の選択肢.
SSV本幹を温存する代替治療 (CHIVA法訳注7)，ASVAL法訳注6)) はこのフローチャートには含まれない
*超音波ガイド下フォーム硬化療法 (UGFS) はSSV径が6 mm未満の症例のみ
EVTA = endovenous thermal ablation; SSV = small saphenous vein; CAC = cyanoacrylate closure; MOCA = mechanochemical ablation; UGFS = ultrasound-guided foam sclerotherapy; CHIVA = ambulatory conservative haemodynamic treatment of venous incompetence in outpatients; ASVAL = ambulatory selective varices ablation under local anaesthesia

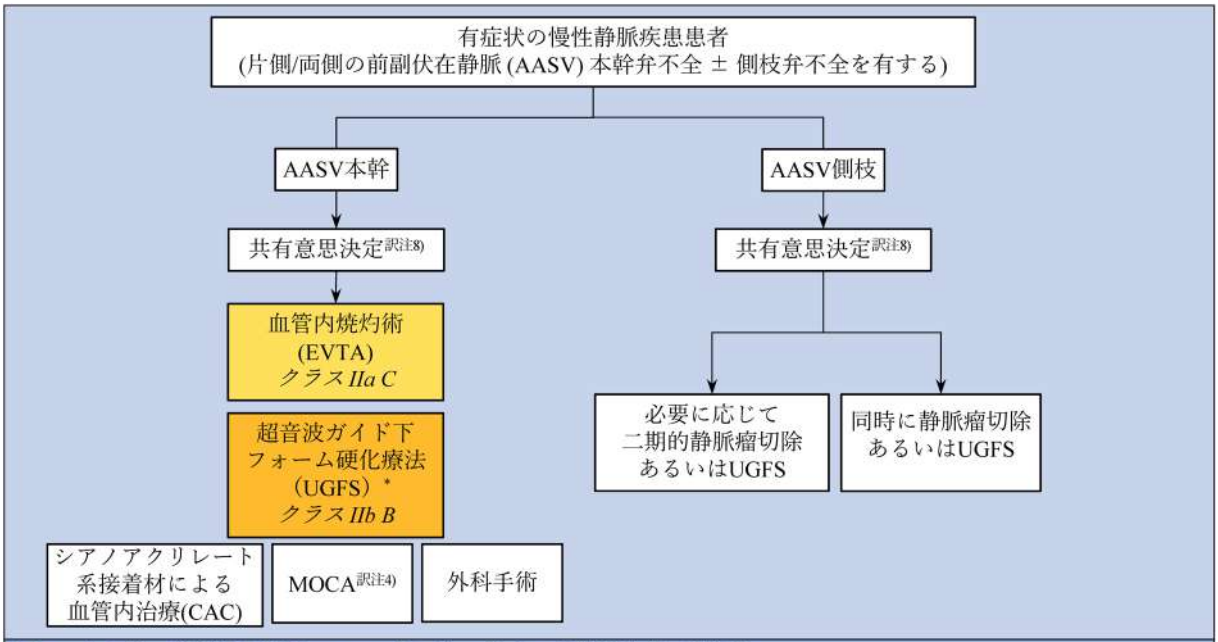

図 9　有症状の前副伏在静脈 (AASV) 弁不全に対する侵襲的治療の選択肢.
AASV本幹を温存する代替戦略 (CHIVA法訳注7)，ASVAL法訳注6)) はこのフローチャートに含まれない
*超音波ガイド下フォーム硬化療法 (UGFS) はAASV径が6 mm未満の症例のみ
EVTA = endovenous thermal ablation; AASV = anterior accessory saphenous vein; CAC = cyanoacrylate closure; MOCA = mechanochemical ablation; UGFS = ultrasound-guided foam sclerotherapy; CHIVA = ambulatory conservative haemodynamic treatment of venous incompetence in outpatients; ASVAL = ambulatory selective varices ablation under local anaesthesia

表11　治療後の再発性静脈瘤の主な原因

原因	内容
治療戦略上の誤り	不適切な侵襲的治療による逆流の残存
	逆流源の同定がされていない不十分な術前デュプレックス超音波検査
	カニュレーション部位の不適切な選択
技術的な誤り	不適切な侵襲的治療による逆流の残存
	血管内治療に対して：
	対象伏在静脈本幹カニュレーションの不成功
	対象部位，伏在大腿静脈接合部 (SFJ) あるいは伏在膝窩静脈接合部 (SPJ) の超音波検査による描出不良
	対象部位に対する不十分なエネルギー，グルー，硬化剤投与
	外科手術に対して：
	不完全なストリッピング
	その他の外科的不成功
血管新生*	前回の侵襲的治療部位近傍に多発する、新生小蛇行逆流静脈の存在
	結紮や焼灼したSFJ，SPJ，穿通枝 (PV)，側枝からの逆流
	デュプレックス超音波検査で確認できる静脈瘤につながる新生静脈
再疎通*	逆流の再発を伴う焼灼伏在静脈の部分的あるいは完全再開通
疾患の進行*	疾患の進行や自然経過のなかで発症した，新たな部位における静脈逆流

DUS = duplex ultrasound; SFJ = saphenofemoral junction; SPJ = saphenopopliteal junction; PV = perforating vein
*DUSによって定義される

5.　深部静脈疾患に対する侵襲的治療（推奨58–66）

本章では，PTSおよび非血栓性腸骨静脈病変（non-thrombotic iliac vein lesion: NIVL）に対する侵襲的治療について解説する．深部静脈病変を有するCVD患者の治療戦略を**図10**，重度の深部静脈流出路通過障害に対する侵襲的治療の治療戦略を**図11**に示す．

推奨58　変更なし

重篤な症状/徴候を呈する腸骨静脈流出路通過障害患者に対して，第一選択として血管内治療を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Neglen et al. (2007)[365], Seager et al. (2016)[369], Rossi et al. (2018)[356], Williams et al. (2020)[355]	

推奨59　新規

腸骨静脈流出路通過障害患者に対する血管内治療を行う場合，治療をガイドするために血管内超音波検査の使用を考慮する

クラス	レベル	参考文献
IIa	C	コンセンサス

推奨60　変更あり

難治性静脈性潰瘍，重症静脈血栓後症候群あるいは重症静脈性跛行を呈する腸骨静脈流出路通過障害患者に対して，血管内治療のみの選択が適切でない場合には外科的あるいはハイブリッド治療による深部静脈の血行再建を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	C	Dumantepe et al. (2020)[382]	

推奨 61 新規

重篤な症状がない腸骨静脈流出路通過障害患者に対しては，血管内治療や外科手術は**推奨**されない

クラス	レベル	参考文献
III	C	コンセンサス

推奨 62 新規

腸骨静脈流出路通過障害に対して血管内治療または外科的再建術を行った患者に対して，侵襲的治療後 1 日と 2 週間，その後定期的にデュプレックス超音波検査によるサーベイランスを行う

クラス	レベル	参考文献
I	C	コンセンサス

推奨 63 新規

腸骨静脈流出路通過障害患者に対して，集学的なチームによる管理を行う

クラス	レベル	参考文献
I	C	コンセンサス

推奨 64 変更なし

重度で持続的な症状および徴候を有する広範囲な軸方向の深部静脈弁不全患者に対して，これまでの治療が失敗している場合，専門施設における弁不全の外科的な修復を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	B	Goel et al. (2015)[394]	

推奨 65 新規

表在静脈および深部静脈弁不全が複合して生じた慢性静脈疾患患者に対して，表在静脈弁不全の治療を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	C	Knipp et al. (2008)[396], Marston et al. (2008)[397]	

推奨 66 新規

膝窩静脈の静脈性血管瘤患者において，血栓塞栓症の合併，嚢状瘤，20 mm を超える紡錘状瘤，または血栓を有する場合は，外科的修復を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	C	Sessa et al. (2000)[401], Bergqvist et al. (2006)[400], Noppeney et al. (2019)[399]	

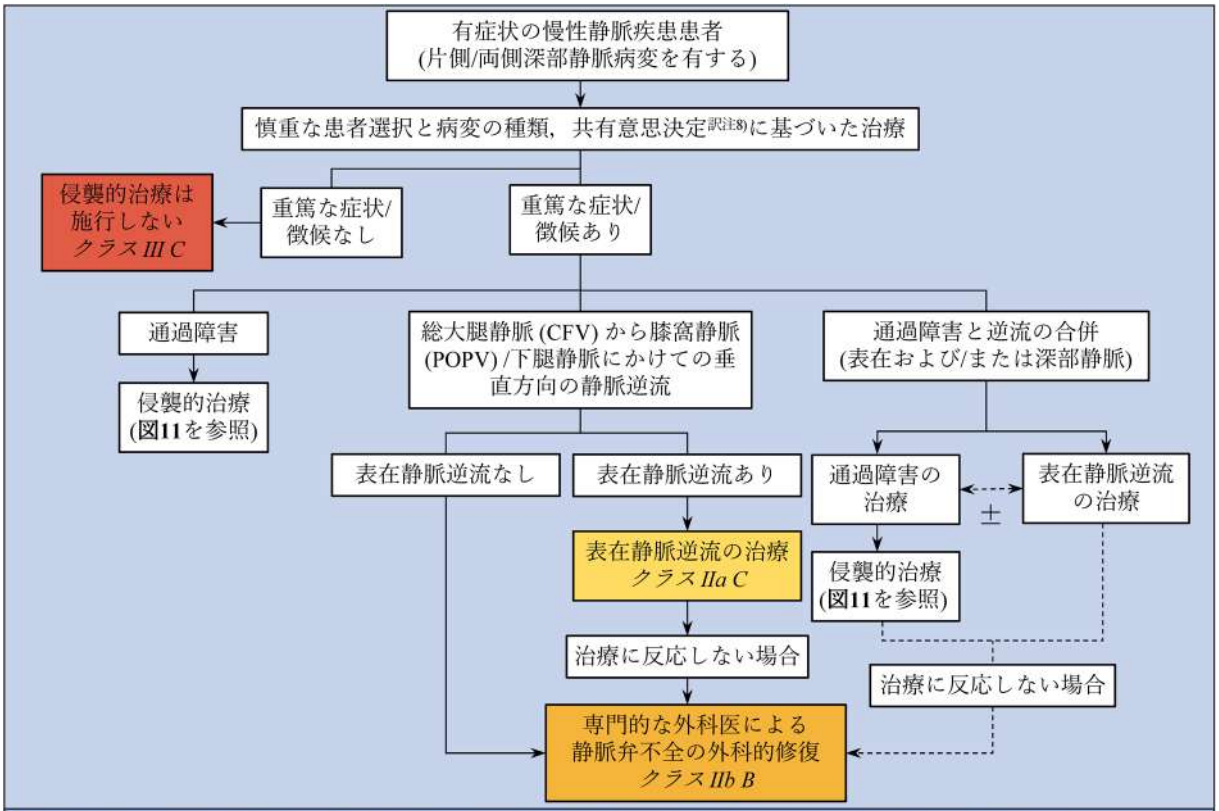

図10 有症状の深部静脈通過障害，静脈逆流もしくは両者を併発した患者に対する治療戦略—一般的概要.
CFV = common femoral vein; POPV = popliteal vein

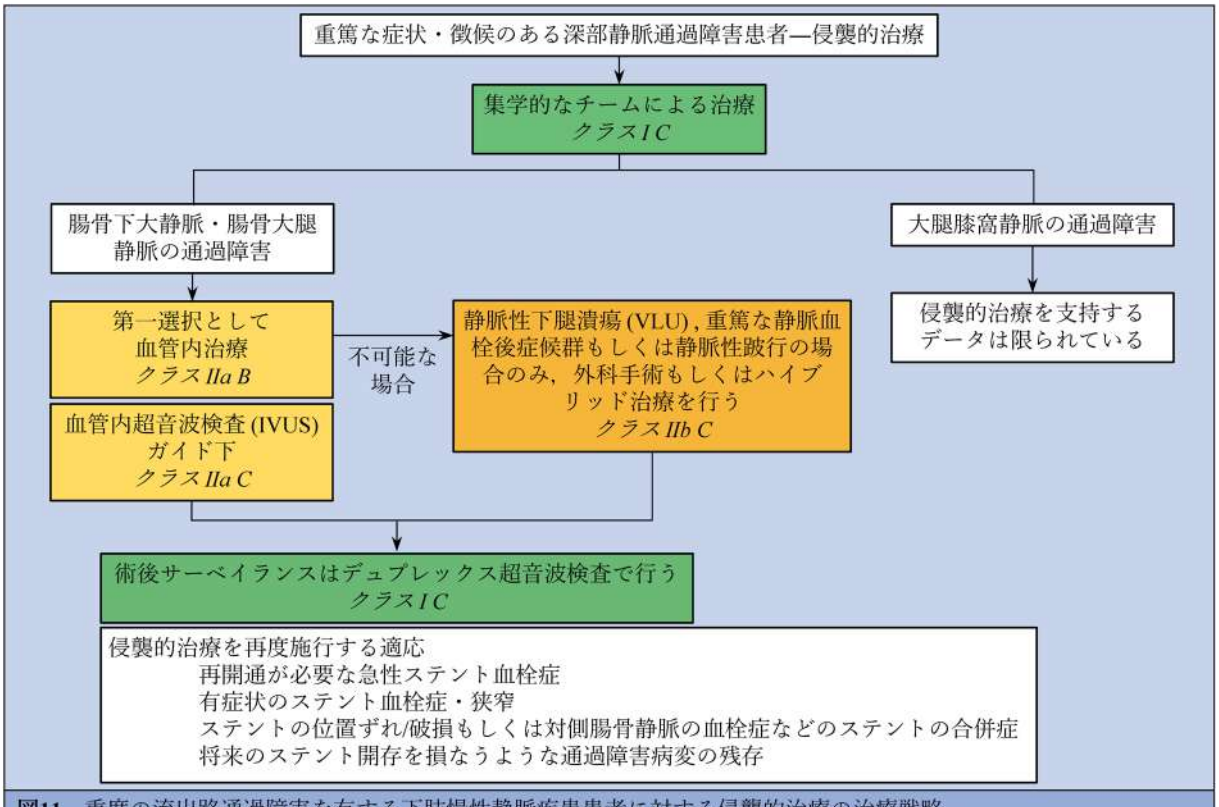

図11　重度の流出路通過障害を有する下肢慢性静脈疾患患者に対する侵襲的治療の治療戦略.
IVUS = intravascular ultrasound; VLU = venous leg ulcer; PTS = post-thrombotic syndrome

6. 静脈性潰瘍の管理（推奨67–82）

本章では，CVDの最重症型である静脈性下腿潰瘍（venous leg ulcer: VLU）の管理について解説する．活動性静脈性下腿潰瘍（C6）の治療戦略を**図12**，治癒した潰瘍（C5）および活動性潰瘍（C6）における表在静脈逆流に対する治療と圧迫療法の治療方針を**図13**に示す．

推奨 67 変更なし

感染のない活動性静脈性下腿潰瘍患者に対して，潰瘍の治癒を促進させる目的での，局所的・全身的な抗生剤の投与は**推奨**されない

クラス	レベル	参考文献	エビデンス表あり
III	B	O'Meara et al. (2014)[418]	

推奨 68 新規

活動性下腿潰瘍患者に対して，動脈の客観的評価を行う

クラス	レベル	参考文献
I	C	コンセンサス

推奨 69 変更なし

活動性静脈性下腿潰瘍患者に対して，潰瘍の治癒を促進させるために圧迫療法を行う

クラス	レベル	参考文献	エビデンス表あり
I	A	O'Meara et al. (2012)[432]	

推奨 70 変更あり

活動性静脈性下腿潰瘍患者に対して，潰瘍治癒を促進させるために，足関節部圧迫圧 40 mmHg 以上を目標に，多層性または非弾性包帯[訳注2)]，あるいは圧調節型圧迫着衣[訳注3)]を用いる

クラス	レベル	参考文献	エビデンス表あり
I	A	O'Meara et al. (2012)[432], Dolibog et al. (2014)[439], Mosti et al. (2020)[442]	

推奨 71 新規

活動性静脈性下腿潰瘍患者において，潰瘍径が小さく，発症が最近の場合は，足関節部圧迫圧 40 mmHg を目標に弾性ストッキングの重ね履きを考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Jünger et al. (2004)[450], Ashby et al. (2014)[440]	

推奨 72 新規

足関節血圧が 60 mmHg 未満，足趾血圧が 30 mmHg 未満，あるいは足関節上腕血圧比が 0.6 未満の活動性静脈性下腿潰瘍患者に対して，長時間の圧迫療法は行わない

クラス	レベル	参考文献
III	C	コンセンサス

推奨 73 変更なし

活動性下腿潰瘍患者に対して，他の圧迫療法の選択肢がない，あるいは他の方法が使用困難であるか潰瘍治癒を促進できなかった場合は，間欠的空気圧迫法を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Dolibog et al. (2014)[439], Alvarez et al. (2020)[443]	

推奨 74 新規

動脈疾患，静脈疾患が併存する混合性潰瘍患者に対して，足関節血圧が 60 mmHg 以上であれば，綿密な管理の下，圧迫圧 40 mmHg 未満に調整した圧迫療法を考慮してもよい

クラス	レベル	参考文献	エビデンス表あり
IIb	C	Mosti et al. (2016)[446], Stansal et al. (2018)[447]	

推奨 75　新規

治癒後の静脈性下腿潰瘍患者に対して，潰瘍再発のリスクを減らすために，長期間の圧迫療法を考慮する

クラス	レベル	参考文献　エビデンス表あり
IIa	B	Clarke-Moloney et al. (2014)[449], Milic et al. (2018)[448]

推奨 76　新規

表在静脈弁不全[訳注4]を伴う活動性静脈性下腿潰瘍患者に対して，潰瘍治癒を促進させるために早期の血管内焼灼術を行う

クラス	レベル	参考文献　エビデンス表あり
I	B	Gohel et al. (2018)[451]

推奨 77　新規

表在静脈弁不全[訳注4]を伴う治癒後の静脈性下腿潰瘍患者においては，潰瘍再発のリスクを減らすために不全静脈の治療を行う

クラス	レベル	参考文献　エビデンス表あり
I	A	Gohel et al. (2007)[452], Gohel et al. (2020)[453]

推奨 78　新規

活動性静脈性下腿潰瘍患者に対して，治療戦略の一環として潰瘍下静脈叢への超音波ガイド下フォーム硬化療法を考慮する

クラス	レベル	参考文献　エビデンス表あり
IIa	C	Bush et al. (2010)[456], Bush et al. (2013)[457], Kamhawy et al. (2020)[458]

推奨 79　新規

活動性または治癒後の静脈性下腿潰瘍と表在静脈弁不全[訳注4]を合併した患者に対して，深部静脈弁不全が存在していても不全表在静脈に対する治療を行う

クラス	レベル	参考文献　エビデンス表あり
I	A	Gohel et al. (2007)[452], Gohel et al. (2018)[451]

推奨 80　新規

表在静脈弁不全[訳注4]および潰瘍付近の不全穿通枝による活動性静脈性下腿潰瘍患者に対して，本幹部逆流と不全穿通枝の同時治療を考慮してもよい

クラス	レベル	参考文献　エビデンス表あり
IIb	C	Abdul-Haqq et al. (2013)[253], van Gent et al. (2015)[254], Gibson et al. (2020)[261]

推奨 81　新規

活動性または治癒後の静脈性下腿潰瘍患者において，腸骨静脈流出路通過障害を伴っている場合は，静脈内ステント留置を考慮する

クラス	レベル	参考文献　エビデンス表あり
IIa	B	Raju et al. (2013)[405], Yin et al. (2015)[359], Williams et al. (2020)[355]

推奨 82　変更なし

活動性静脈性下腿潰瘍患者に対して，潰瘍治癒を改善するために，圧迫療法や局所の創処置に加えて微粉化精製フラボノイド画分，ヒドロキシエチルルトシド，ペントキシフィリン，またはスロデキシドの使用を考慮する

クラス	レベル	参考文献　エビデンス表あり
IIa	A	Coleridge-Smith et al. (2005)[461], Jull et al. (2012)[464], Scallon et al. (2013)[462], Wu et al. (2016)[463]

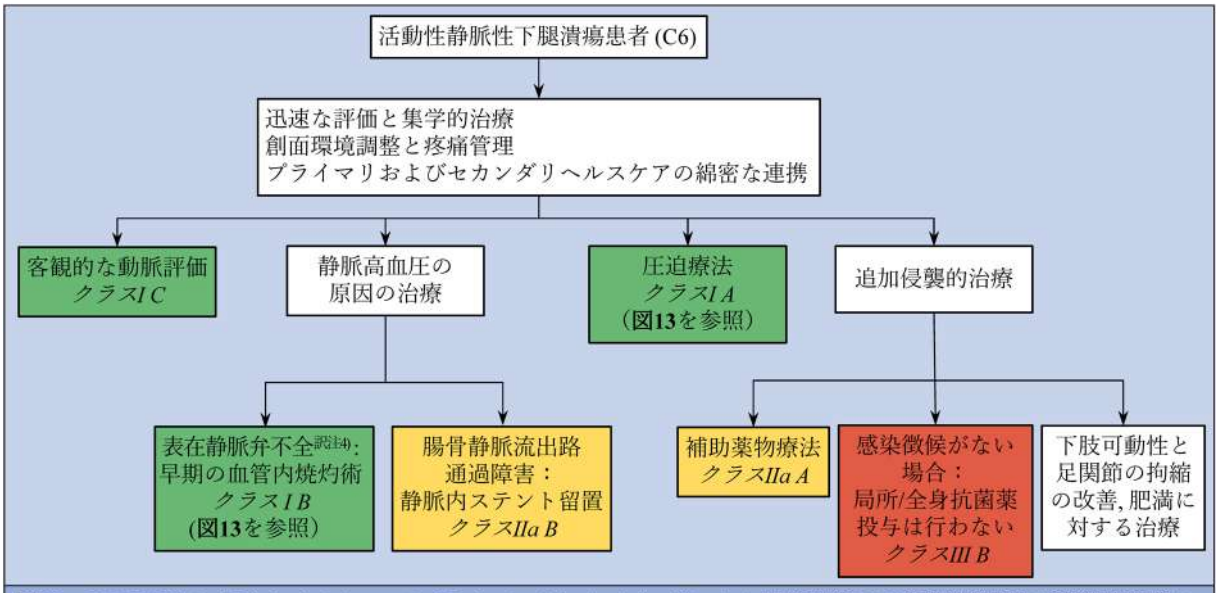

図12　CEAP (Clinical Etiological Anatomical Pathophysiological classification) 臨床分類C6の活動性静脈性下腿潰瘍患者に対する治療戦略.

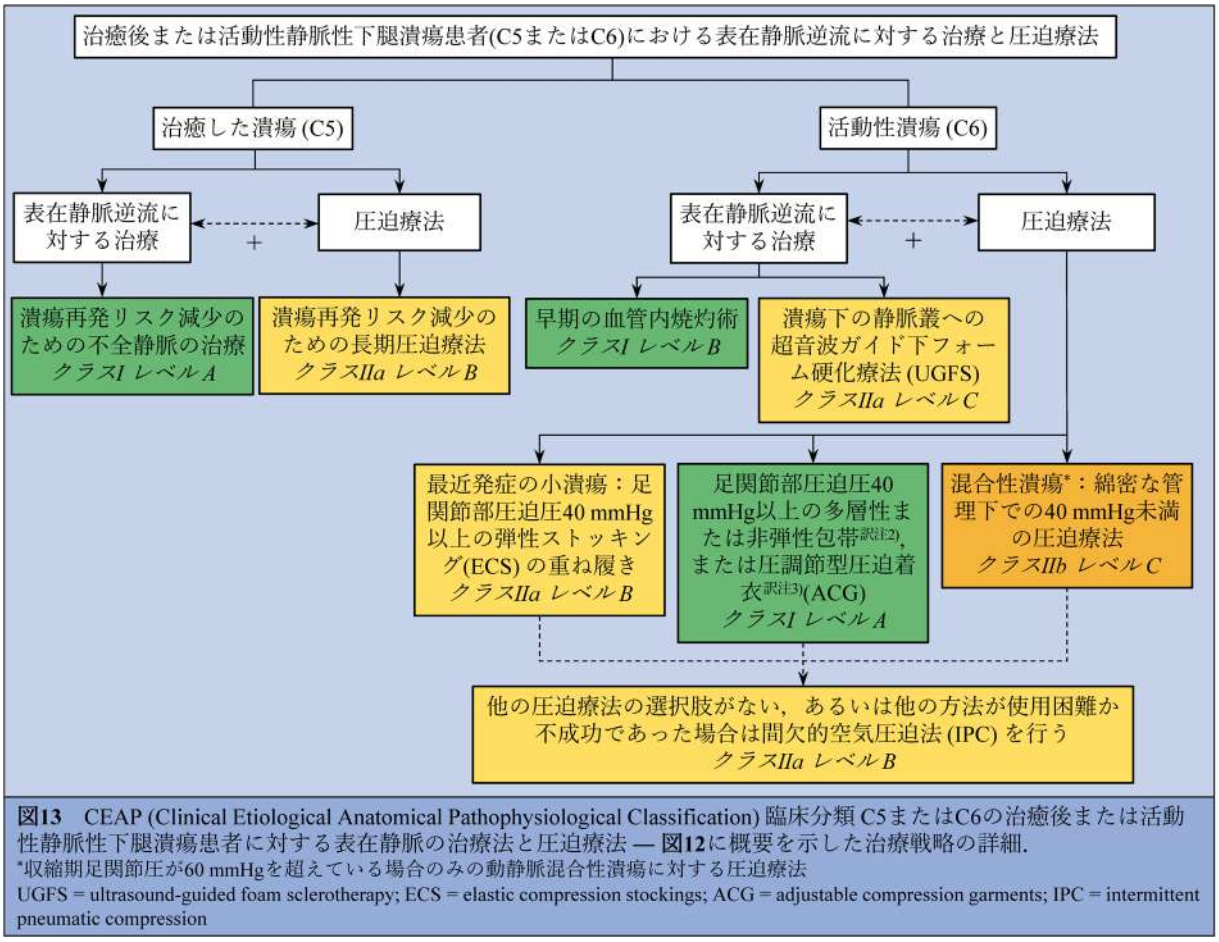

図13　CEAP (Clinical Etiological Anatomical Pathophysiological Classification) 臨床分類 C5またはC6の治癒後または活動性静脈性下腿潰瘍患者に対する表在静脈の治療法と圧迫療法 — **図12**に概要を示した治療戦略の詳細.
*収縮期足関節圧が≦60 mmHgを超えている場合のみの動静脈混合性潰瘍に対する圧迫療法
UGFS = ultrasound-guided foam sclerotherapy; ECS = elastic compression stockings; ACG = adjustable compression garments; IPC = intermittent pneumatic compression

7.　下肢静脈瘤の原因となる骨盤静脈疾患の治療（推奨83–88）

本章では，下肢静脈瘤を伴う性腺静脈（卵巣静脈，精巣静脈）および内腸骨静脈逆流の治療について解説する．これらは骨盤静脈疾患（pelvic venous disorders: PeVD）に含まれ，メイ・ターナー症候群（May-Thurner syndrome），骨盤内うっ滞症候群，ナットクラッカー症候群（nutcracker syndrome）と呼ばれてきた．最近では，米国静脈リンパ学会（American Vein and Lymphatic Society）が新しいPeVDの分類としてSymptoms-Varices-Pathophysiology classification（SVP分類）を提唱している．SVP分類におけるPeVDが発生する解剖学的部位を**図14**に示す．臨床的にPeVDによる下肢静脈瘤が疑われる患者の治療方針を**図15**に示す．

推奨 83　新 規

骨盤痛があり，骨盤静脈疾患を臨床的に疑う女性患者では，痛みの原因になる他疾患を除外する

クラス	レベル	参考文献	エビデンス表あり
I	C	Park et al. (2004)[473]	

推奨 84　新 規

有症状の下肢静脈瘤で骨盤由来の可能性がある場合には，骨盤からのエスケープポイントをデュプレックス超音波検査で評価する

クラス	レベル	参考文献	エビデンス表あり
I	C	Labropoulos et al. (2001)[470]	

推奨 85　新 規

骨盤静脈疾患が疑われる女性患者に対して，静脈疾患の存在を確認するために腹部および/または経腟超音波検査を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Park et al. (2004)[473], Steenbeek et al. (2018)[472]	

推奨 86　新 規

骨盤由来の下肢静脈瘤があるが，治療を要する骨盤症状がない患者に対して，初期治療として下肢静脈瘤と骨盤内からのエスケープポイントに対する局所治療を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	C	Creton et al (2007)[478], Castenmiller et al. (2013)[480], Hartung et al. (2015)[479], Gavrilov et al. (2017)[471], Delfrate et al. (2019)[477]	

推奨 87　新 規

骨盤由来の下肢静脈瘤があるが，骨盤症状がない患者に対して，初期治療として骨盤静脈塞栓術を行うべきではない

クラス	レベル	参考文献	エビデンス表あり
III	C	Creton et al. (2007)[478], Castenmiller et al. (2013)[480], Hartung et al. (2015)[479]	

推奨 88　新 規

骨盤由来の下肢静脈瘤があり，治療を要する骨盤症状がある患者に対して，症状軽減のために骨盤静脈塞栓術を考慮する

クラス	レベル	参考文献	エビデンス表あり
IIa	B	Hartung et al. (2015)[479], Champaneria et al. (2016)[476], Brown et al. (2018)[475]	

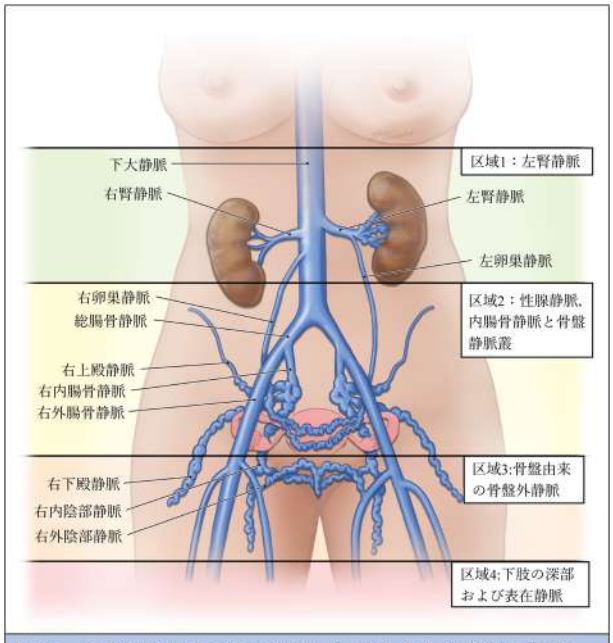

図14　骨盤静脈疾患のSVP分類における女性の腹部および骨盤の4つの解剖学的区域（区域1–4）．
症状（S），静脈瘤（V），病態生理（P）をこれらの4区域に分けて表記する．2021.Meissnerらの許可により改編[465]

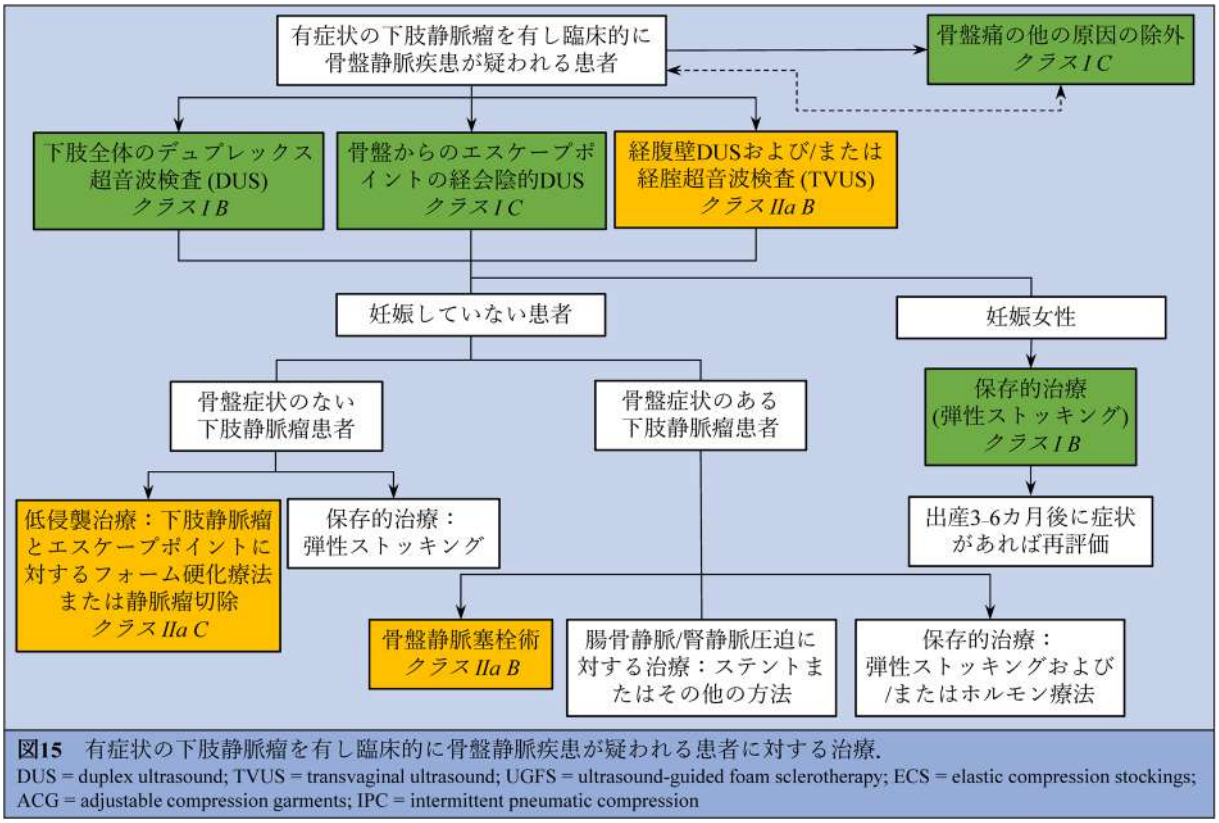

図15　有症状の下肢静脈瘤を有し臨床的に骨盤静脈疾患が疑われる患者に対する治療．
DUS = duplex ultrasound; TVUS = transvaginal ultrasound; UGFS = ultrasound-guided foam sclerotherapy; ECS = elastic compression stockings; ACG = adjustable compression garments; IPC = intermittent pneumatic compression

8.　特別な留意点（推奨89–94）

本章では，急性合併症（表在静脈血栓症，出血）および患者の特別な状態（肥満，妊娠，抗凝固療法中，小児）について解説する．

推奨 89			新規
表在静脈から誘因なく急性出血が認められた患者に対して，早期の評価と治療のために専門医への紹介を行う			
クラス	レベル	参考文献	
I	C	コンセンサス	

推奨 90			新規
表在静脈や毛細血管拡張症からの急性出血を生じたことがある慢性静脈疾患患者に対しては，再出血の予防に局所のフォーム硬化療法を考慮する			
クラス	レベル	参考文献	エビデンス表あり
IIa	C	Hamahata et al. (2022)[483], Serra et al. (2018)[34]	

推奨 91			新規
肥満の慢性静脈疾患患者に対して，静脈疾患の予後改善のために減量を考慮する			
クラス	レベル	参考文献	エビデンス表あり
IIa	C	Parkyn et al. (2014)[456], Shannlan et al. (2021)[490]	

推奨 92			新規
治療を要する伏在静脈本幹の弁不全を有する肥満患者に対して，血管内焼灼術を考慮する			
クラス	レベル	参考文献	エビデンス表あり
IIa	C	Deol et al. (2020)[489]	

推奨 93			新規
慢性静脈疾患の症状および/または徴候を有する妊婦に対して，弾性ストッキングを使用する			
クラス	レベル	参考文献	エビデンス表あり
I	B	Thalaer et al. (2001)[492], Adamczyk et al. (2013)[494], Saliba et al. (2020)[493]	

推奨 94			新規
血管内焼灼術を予定している慢性静脈疾患患者で，抗凝固療法施行中の場合には，抗凝固療法の休止は**推奨**されない			
クラス	レベル	参考文献	エビデンス表あり
III	C	Westin et al. (2020)[496]	

9.　エビデンスが不足している分野（推奨なし）

本章では，現時点ではエビデンスが不足しており，今後，研究を行うべき課題について解説する．

10.　患者向けの情報（推奨なし）

本章では，患者向けに本ガイドラインを解説する．CVDの臨床所見を**図16**に示す．

図16　慢性静脈疾患の種々の下肢臨床像.
A. 左膝屈側の毛細血管拡張症; B. 左下肢内側の静脈瘤; C. 右下腿背面の静脈瘤; D. 左足部と足関節部の腫脹; E. 左足関節部内側の色素沈着; F. 左足部内側の白斑; G. 静脈性下腿潰瘍に対する皮膚移植後の瘢痕; H. 活動性下腿潰瘍

利益相反

広川雅之は株式会社インテグラルの顧問である.

付　記

本論文は倫理的配慮を必要としない.

参考文献

本日本語訳に関連する参考文献は太字体として表記した．太字体以外の文献は本日本語訳には登場せず，原文にのみ掲載されている.

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訳注1）いわゆる低濃度大量局所浸潤麻酔（tumescent local anesthesia: TLA）のこと
訳注2）座位から立位や運動時の圧迫圧の変動が弾性包帯よりも大きく，浮腫や静脈性下腿潰瘍の圧迫療法に使用される．一部の多層包帯法，ギプス様の圧迫装具が含まれる
訳注3）主に面ファスナー（ベルクロ）を使用した圧迫装具を指す
訳注4）侵襲的治療（血管内治療，ストリッピング，超音波ガイド下フォーム硬化療法）の適応となる有症状の伏在型静脈瘤を意味する
訳注5）静脈内膜の機械的損傷と硬化療法を組み合わせた血管内治療，NTNT法の1つ
訳注6）上行性理論に基づき，主に静脈瘤のみを切除する伏在静脈温存低侵襲手術の1つ
訳注7）超音波検査で逆流静脈を綿密にマッピングして，適切な部位の静脈を結紮する伏在静脈温存低侵襲手術の1つ
訳注8）患者と医療者による意思決定の共有（shared decision making: SDM）のこと

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A Summary of European Society for Vascular Surgery (ESVS) 2022 Clinical Practice Guidelines on the Management of Chronic Venous Disease of the Lower Limbs: Japanese Translation by Japanese Society of Phlebology and Japanese Society for Vascular Surgery

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Key words: guidelines, chronic venous disease, varicose veins, deep vein thrombosis, post-thrombotic syndrome

(Jpn J Vasc Surg 2023; **32**: 211–256)