

EVIDENCE BASED STATEMENT

DOMAIN **02**, Statement **01**

TOPIC: “Leg and pelvic venous scanning protocol”

SEARCH TERMS & SOURCES

((“varicose veins”[MeSH Terms]) OR (“venous insufficiency”[MeSH Terms])) AND (“ultrasonography”[MeSH Terms])

INCLUSION CRITERIA

- Lower limb only
- Reviews
- Publication < 10 years, only ENG

SEARCH RESULT BEFORE - AFTER SELECTION

79 (before) - 17 (after selection)

PERTINENT LITERATURE NOT IDENTIFIED BY THE LITERATURE SEARCH

1. Giancesini S, Obi A, Onida S, et al. Global guidelines trends and controversies in lower limb venous and lymphatic disease. Phlebology. 2019 Sep;34(1 Suppl):4-66.
2. García-Honduvilla N, Asúnsolo Á, Ortega MA, et al. Increase and Redistribution of Sex Hormone Receptors in Premenopausal Women Are Associated with Varicose Vein Remodelling. Oxid Med Cell Longev. 2018 Sep 3;2018:3974026
3. Labropoulos N, Jasinski PT, Adrahtas D, et al. A standardized ultrasound approach to pelvic congestion syndrome. Phlebology. 2017 Oct;32(9):608-619.
4. Guideline developed in collaboration with the American College of Radiology; Society of Pediatric Radiology; Society of Radiologists in Ultrasound. AIUM practice guideline for the performance of peripheral venous ultrasound examinations. J Ultrasound Med 2015;34:1-9
5. Khilnani NM. Duplex ultrasound evaluation of patients with chronic venous disease of the lower extremities. AJR Am J Roentgenol. 2014 Mar;202(3):633-42.
6. Ganeshan A, Upponi S, Hon LQ, et al. Chronic pelvic pain due to pelvic congestion syndrome: the role of diagnostic and interventional radiology. Cardiovasc Intervent Radiol. 2007 Nov-Dec;30(6):1105-11.
7. Paschos GK, FitzGerald GA. Circadian clocks and vascular function. Circ Res. 2010;106(5):833-841.

EVIDENCE BASED STATEMENT

Domain 2; Statement 1

IDENTIFIED REFERENCES

1. Cosín Sales O. Ultrasound-guided interventional radiology procedures on veins. *Radiologia (Engl Ed)*. 2022 Jan-Feb;64(1):89-99.
2. Chopard R, Albertsen IE, Piazza G. Diagnosis and Treatment of Lower Extremity Venous Thromboembolism: A Review. *JAMA*. 2020 Nov 3;324(17):1765-1776.
3. Srisuwan T, Inmutto N, Kattipathanapong T, Rerkasem A, Rerkasem K. Ultrasound Use in Diagnosis and Management of Venous Leg Ulcer. *Int J Low Extrem Wounds*. 2020 Dec;19(4):305-314.
4. Gautam G, Sebastian T, Klok FA. How to Differentiate Recurrent Deep Vein Thrombosis from Postthrombotic Syndrome. *Hamostaseologie*. 2020 Aug;40(3):280-291.
5. Rajabi-Estarabadi A, Kayssi A, Alavi A, Kirsner RS. Vascular Tests for Dermatologists. *Am J Clin Dermatol*. 2019 Oct;20(5):657-667.
6. Carman TL, Al-Omari A. Evaluation and Management of Chronic Venous Disease Using the Foundation of CEAP. *Curr Cardiol Rep*. 2019 Aug 30;21(10):114.
7. Cirocchi R, Henry BM, Rambotti M, et al. Systematic review and meta-analysis of the anatomic variants of the saphenofemoral junction. *J Vasc Surg Venous Lymphat Disord*. 2019 Jan;7(1):128-138.e7.
8. Steenbeek MP, van der Vleuten CJM, Schultze Kool LJ, Nieboer TE. Noninvasive diagnostic tools for pelvic congestion syndrome: a systematic review. *Acta Obstet Gynecol Scand*. 2018 Jul;97(7):776-786.
9. Garcia R, Labropoulos N. Duplex Ultrasound for the Diagnosis of Acute and Chronic Venous Diseases. *Surg Clin North Am*. 2018 Apr;98(2):201-218.
10. Healy DA, Kimura S, Power D, et al. A Systematic Review and Meta-analysis of Thrombotic Events Following Endovenous Thermal Ablation of the Great Saphenous Vein. *Eur J Vasc Endovasc Surg*. 2018 Sep;56(3):410-424.
11. Spinedi L, Broz P, Engelberger RP, et al. Clinical and duplex ultrasound evaluation of lower extremities varicose veins - a practical guideline. *Vasa*. 2017 Aug;46(5):325-336.
12. García Carriazo M, Gómez de las Heras C et al. Doppler ultrasound study and venous mapping in chronic venous insufficiency. *Radiologia*. 2016 Jan-Feb;58(1):7-15.
13. Kokkosis AA, Labropoulos N, Gasparis AP. Investigation of venous ulcers. *Semin Vasc Surg*. 2015 Mar;28(1):15-20.
14. O'Flynn N, Vaughan M, Kelley K. Diagnosis and management of varicose veins in the legs: NICE guideline. *Br J Gen Pract*. 2014 Jun;64(623):314-5.
15. Pavlović MD, Schuller-Petrović S, Pichot O, et al. Guidelines of the First International Consensus Conference on Endovenous Thermal Ablation for Varicose Vein Disease--ETAV Consensus Meeting 2012. *Phlebology*. 2015 May;30(4):257-73.
16. Michiels JJ, Moosdorff W, Maasland H, et al. Duplex ultrasound, clinical score, thrombotic risk, and D-dimer testing for evidence based diagnosis and management of deep vein thrombosis and alternative diagnoses in the primary care setting and outpatient ward. *Int Angiol*. 2014 Feb;33(1):1-19.
17. Malgor RD, Labropoulos N. Diagnosis of venous disease with duplex ultrasound. *Phlebology*. 2013 Mar;28 Suppl 1:158-61.

EVIDENCE BASED STATEMENT

Domain 2; Statement 1

TEXT FOR INCLUSION IN THE DOCUMENT

DOMAIN 02, Statement 01, TOPIC: “**Leg and pelvic scanning protocol**”

Venous ultrasound scanning is the pillar of phlebology diagnostic, yet it presents the challenge of being operator dependent. In order to limit inter-observer variability and to maximize objective data production, validated scanning protocols for both lower limb and pelvic venous system must be followed. Similarities and controversies can be found in the papers and guidelines describing such protocols, for which global scientific synergy should be dedicated to the description of an internationally validated standardized lower limb and pelvic venous ultrasound assessment.

This should include validated quantification of obstruction, specification of the effects of lying vs semirecumbent patient position during iliac stenosis hemodynamic assessment, follow up timing and proper nomenclature use.

***[Gianesini S, Obi A, Onida S, et al. Global guidelines trends and controversies in lower limb venous and lymphatic disease. *Phlebology*. 2019 Sep;34(1 Suppl):4-66]**

Venous reflux assessment should always be done in a standing or at least reverse Trendelenburg position in order to avoid underestimation of the same valvular incompetence.

The assessed leg should be not-weight bearing in order to avoid muscle pump function activation and consequent systolic push on the venous system. Taking into consideration the time of the day and the season of the year is important for possible vessel caliber variation due to physical overload and temperature impact on the venous tone.

[Paschos GK, FitzGerald GA. Circadian clocks and vascular function. *Circ Res*. 2010;106(5):833-841].

Hormonal variation might influence the venous hemodynamics as well.

[García-Honduvilla N, Asúnsolo Á, Ortega MA, et al. Increase and Redistribution of Sex Hormone Receptors in Premenopausal Women Are Associated with Varicose Vein Remodelling. *Oxid Med Cell Longev*. 2018 Sep 3;2018:3974026].

In case of pelvic reflux suspect, a detailed scanning of the inferior vena cava, left renal vein, iliac veins, ovarian veins, trans and peri-uterine veins and the tributaries of the internal iliac veins should be performed.

[Labropoulos N, Jasinski PT, Adrahtas D, et al. A standardized ultrasound approach to pelvic congestion syndrome. *Phlebology*. 2017 Oct;32(9):608-619].

Intravascular ultrasound demonstrated to be essential in iliac vein assessment for iliac vein stenting, therefore its use should always be considered in the suspect of a hemodynamically significant iliac stenosis potentially eligible to treatment.

[Montminy ML, Thomasson JD, Tanaka GJ, et al. A comparison between intravascular ultrasound and venography in identifying key parameters essential for iliac vein stenting. *J Vasc Surg Venous Lymphat Disord*. 2019 Nov;7(6):801-807].

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STATEMENT FOR PUBLIC EVIDENCE-BASED AWARENESS

“TOPIC” Echo-Doppler for lower limb venous disease detection must be performed with the patient in standing position. Pelvic sources of the disease must be excluded. Intravascular Ultrasound (IVUS) should always be taken into consideration for possibly treatable conditions”

4 SELECTED REFERENCES

1. Giancesini S, Obi A, Onida S, et al. Global guidelines trends and controversies in lower limb venous and lymphatic disease. *Phlebology*. 2019 Sep;34(1 Suppl):4-66
2. Paschos GK, FitzGerald GA. Circadian clocks and vascular function. *Circ Res*. 2010;106(5):833-841
3. García-Honduvilla N, Asúnsolo Á, Ortega MA, et al. Increase and Redistribution of Sex Hormone Receptors in Premenopausal Women Are Associated with Varicose Vein Remodelling. *Oxid Med Cell Longev*. 2018 Sep 3;2018:3974026
4. García-Honduvilla N, Asúnsolo Á, Ortega MA, et al. Increase and Redistribution of Sex Hormone Receptors in Premenopausal Women Are Associated with Varicose Vein Remodelling. *Oxid Med Cell Longev*. 2018 Sep 3;2018:3974026
5. Labropoulos N, Jasinski PT, Adrahtas D, et al. A standardized ultrasound approach to pelvic congestion syndrome. *Phlebology*. 2017 Oct;32(9):608-619
6. Montminy ML, Thomasson JD, Tanaka GJ, et al. A comparison between intravascular ultrasound and venography in identifying key parameters essential for iliac vein stenting. *J Vasc Surg Venous Lymphat Disord*. 2019 Nov;7(6):801-807

IDENTIFIED LITERATURE BIAS

Circadian, hormonal, seasonal hemodynamic variations
Lack of head to head comparison among different protocols.

SUGGESTED NEXT LINES OF RESEARCH

Validation of lower limb and pelvic international homogeneous scanning protocols