

- centro. Rev Senol Patol Mamar. 2020. <http://dx.doi.org/10.1016/j.senol.2020.05.005>.
2. Bonito FJP, de Almeida Cerejeira D, Dahlstedt-Ferreira C, Oliveira Coelho H, Rossas R. Radiation-induced angiosarcoma of the breast: a review. *Breast J*. 2020;26:458–63.
 3. Veronesi U, Saccozzi R, del Vecchio M, Banfi A, Clemente C, de Lena M, et al. Comparing radical mastectomy with quadrantectomy, axillary dissection, and radiotherapy in patients with small cancers of the breast. *New Engl J Med*. 1981;305:6–11.
 4. Fisher B, Bauer M, Margolese R, Poisson R, Pilch Y, Redmond C, et al. Five-year results of a randomized clinical trial comparing total mastectomy and segmental mastectomy with or without radiation in the treatment of breast cancer. *N Engl J Med*. 1985;312:665–73.
 5. García Novoa A, Acea Nebril B, Bouzón Alejandro A, Cereijo Garea C, Antolín Novoa S. Angiosarcoma radioinducido de mama en paciente con síndrome de Li-Fraumeni. *Cir Esp*. 2019;97(2):114–6.
 6. Cahan WG, Woodard HQ, Higinbotham NL. Sarcoma arising in irradiated bone; report of 11 cases. *Cancer*. 1948;1:3–29.
 7. Seinen JM, Styring E, Verstappen V, von Steyern FV, Rydholm A, Suurmeijer AJH, et al. Radiation-associated angiosarcoma after breast cancer: high recurrence rate and poor survival despite surgical treatment with R0 resection. *Ann Surg Oncol*. 2012;19:2700–6.
 8. Cao J, Wang J, He C, Fang M. Angiosarcoma: a review of diagnosis and current treatment. *Am J Cancer Res*. 2019;9:2303–13.
 9. Ghareeb ER, Bhargava R, Vargo JA, Florea AV, Beriwal S. Primary and radiation-induced breast angiosarcoma: clinicopathologic predictors of outcomes and the impact of adjuvant radiation therapy. *Am J Clin Oncol*. 2016;39:463–7.
 10. Depla AL, Scharloo-Karels CH, de Jong M, Oldenburg S, Kolff MW, Oei SB, et al. Treatment and prognostic factors of radiation-associated angiosarcoma (RAAS) after primary breast cancer: a systematic review. *Eur J Cancer*. 2014;50:1779–88.

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What to do (or what «not to do») to increase the use of graduated compression stockings in patients with chronic venous disease? ☆



¿Qué hacer (o qué «no hacer») para aumentar el uso de medias de compresión graduada en pacientes con enfermedad venosa crónica?

Although in many public hospitals the care of patients with chronic venous disease (CVD) falls to general surgeons, they often do not have adequate continuing education, which may mean they are not offering the most effective treatment.¹

In the management of any stage of CVD, compression therapy (CT) using a graduated compression stocking (GCS) is useful, safe, and inexpensive, and has been proposed as a first line of treatment or as adjunctive therapy in addition to any other treatment. However, non-compliance rates with CT are very high, between 30%–65%, with poor tolerance to GCS, one of the causes being inappropriate prescription.²

In recent years, recommendations have been made on what to do (and especially what not to do) for more effective use of therapeutic resources. To improve tolerance of GCS and reduce non-compliance we propose:

- 1) Do not prescribe strong compression stockings as dogma. Consider a lower compression stocking to improve tolerance.
 - a) Justification. Traditionally, CT has been used in the form of class 2 strong compression (pressure 25–35 mmHg GCS (GCS-2), following a dogma that “below these levels,

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compression was not effective”.³ But as the usefulness of GCS is limited by low compliance rates,² to increase compliance “avoiding a dogmatic assignment of compression levels” it has been suggested that lower compression levels should be recommended (especially at the outset and in specific situations).^{4,5}

- b) Clinical rationale. CT significantly improves all haemodynamic parameters (air plethysmography) regardless of degree of compression.⁶ Class 1 GCS (pressure: 18–24 mmHg) (GCS-1) are as effective as GCS-2 in reducing venous symptoms and oedema, but have higher compliance rates (up to 95%).^{4,5} A meta-analysis of 11 randomised clinical trials (RCT) concludes that, with respect to symptom control and prevention of oedema, using GCS-1 is more effective than no compression at all, with no difference found between GCS-1 and CGS-2.⁷ Therefore, some guidelines already advise prescribing GCS-1 in patients with uncomplicated CVD.^{4,5} But in more advanced CVD, GCS-1 have been shown to be as effective as GCS-2, but with better adherence.⁸ Despite all this evidence, GCS-1 are “underrated”. A lack of physical abilities (elderly, obesity, arthritis...) is known to influence adherence, and therefore it is suggested to prescribe knee-length GCS-1 for these cases.³ Other authors extend this idea to all patients, proposing a prescription based on patient preference, and the latest guidelines advise prescribing the lowest effective compression class,^{4,5} and subsequently increasing the compression level if the patient tolerates it.⁹ In patients who require GCS-2 but do not tolerate them, layering 2 GCS-1 achieves optimal compression with better tolerance.⁹
- c) Clinical impact. It should not be forgotten that “the goal of CT is always to improve quality of life”.⁵ “CT should be chosen in such a way that patients feel better with CT than without it”.⁴ Therefore, prescribing GCS-1 in patients with poor tolerance to GCS-2, and in patients starting CT will increase its use, without decreasing its efficacy.
- 2) Do not prescribe tights or thigh-high stockings as a first choice, but rather use a short stocking that has equal efficacy and better tolerance.
- a) Justification. Traditionally, CT has been prescribed in the form of a long GCS (L-GCS) (tights-type or thigh-high), but its difficulty in fitting, lower tolerance (discomfort, heat, sliding on the thigh, etc.) and higher cost¹⁰ have led to high rates of non-compliance, limiting its benefit. Using a short GCS (S-GCS) (knee-length, stocking-type), instead of the L-GCS, may increase adherence.
- b) Clinical rationale. Numerous studies comparing L-CGS versus S-CGS have found no significant differences,⁶ except that the short stockings are better tolerated, more comfortable and easier to put on, do not wrap around the thigh and are cheaper.¹⁰ In post-thrombotic patients, an RCT concluded that L-CGS do not offer better protection against post-thrombotic syndrome than S-CGS, have more complications and are less well tolerated.¹¹ The current trend in CT is that “patients feel better with CT than without it”, and the use of S-CGS is already advised to improve symptoms and distal oedema, and to prevent skin changes.³ Its improved

usability is especially important in patients >65 years, with obesity and/or osteoarthritis who are also recommended to use lower pressure CGS.³ The only situations in which an L-CGS should be preferred are in lymphoedema and knee-thigh oedema due to proximal thrombosis.⁴ In all other situations, given the similarity of efficacy, the choice should be based on patient preference.⁴⁻⁶

- c) Clinical impact. Except for in patients with proximal oedema, in the vast majority of patients with CVD use of C-CGS increases the tolerability of CT without decreasing its efficacy.

REFERENCES

- Morales-Cuenca G, Moreno-Egea A, Aguayo Albasini JL. Los cirujanos generales frente a la cirugía de las varices. *Cir Esp*. 2009;85:205–13. <http://dx.doi.org/10.1016/j.ciresp.2008.10.007>.
- Raju S, Hollis K, Neglen P. Use of compression stockings in chronic venous disease: patient compliance and efficacy. *Ann Vasc Surg*. 2007;21:790–5. <http://dx.doi.org/10.1016/j.avsg.2007.07.014>.
- Götz J, Kaisermayer E, Haase H, Jünger M, Riebe H. Better wearing comfort of knee-length elastic compression stockings with an interface pressure of 18–21 mmHg compared to 23–32 mmHg in elderly people after a one day trial – Influence on foot deformities, rheumatism and arthritis. *Clin Hemorheol Microcirc*. 2019;73:145–56. <http://dx.doi.org/10.3233/CH-199207>.
- Deutsche Gesellschaft für Phlebologie. Leitlinie Medizinische Kompressionstherapie der Extremitäten mit Medizinischem Kompressionsstrumpf (MKS), Phlebologischem Kompressionsverband (PKV) und Medizinischen adaptiven Kompressionssystemen (MAK). Available from: <https://www.awmf.org/leitlinien/detail/ll/037-005.html>. [Accessed 1 October 2020].
- Riebe H, Konschake W, Westphal T, Junger M. Innovationen der medizinischen Kompressionstherapie. *Hautarzt*. 2020;71:24–31. <http://dx.doi.org/10.1007/s00105-019-04516-y>.
- Lattimer CR, Azzam M, Kalodiki E, Makris GC, Geroulakos G. Compression stockings significantly improve hemodynamic performance in post-thrombotic syndrome irrespective of class or length. *J Vasc Surg*. 2013;58:158–65. <http://dx.doi.org/10.1016/j.jvs.2013.01.003>.
- Amsler F, Blattler W. Compression therapy for occupational leg symptoms and chronic venous disorders — a meta-analysis of randomised controlled trials. *Eur J Vasc Endovasc Surg*. 2008;35:366–72. <http://dx.doi.org/10.1016/j.ejvs.2007.09.021>.
- Clarke-Moloney M, Keane N, O'Connor V, Ryan MA, Meagher H, Grace PA, et al. Randomised controlled trial comparing European standard class 1 to class 2 compression stockings for ulcer recurrence and patient compliance. *Inter Wound J*. 2014;11:404–8. <http://dx.doi.org/10.1111/j.1742-481X.2012.01108.x>.
- Bjork R, Ehmann S. S.T.R.I.D.E. professional guide to compression garment selection for the lower extremity. *J Wound Care*. 2019;28:1–44. <http://dx.doi.org/10.12968/jowc.2019.28.Sup6a.S1>.
- Brady D, Raingruber B, Peterson J, Varnau W, Denman J, Resuello R, et al. The use of knee-length versus thigh-length compression stockings and sequential compression devices. *Crit Care Nurs Q*. 2007;30:255–62. <http://dx.doi.org/10.1097/01.CNQ.0000278926.67562.2f>.

11. Prandoni P, Noventa F, Quintavalla R, Bova C, Cosmi B, Siragusa S, et al. Thigh-length versus below-knee compression elastic stockings for prevention of the postthrombotic syndrome in patients with proximal-venous thrombosis: a randomized trial. *Blood*. 2012;119:1561-5. <http://dx.doi.org/10.1182/blood-2011-11-391961>.

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