

## Graduated compression in pelvic venous disease

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### ABSTRACT

Pelvic venous disease (PeVD) are a not rare cause of venous insufficiency in the leg that is frequently underestimated and poorly managed. Graduated compression stockings (GCSs) represents a pillar in lower limb chronic venous disease (CVD). Despite these first two considerations, clear GCS indications in PeVD are still missing due to the lack of literature data on this topic. In the present short report, we offer an insight on the topic and the potential rationale for GCS use in PeVD.

**Keywords:** Compression, pelvic, venous.

Pelvic venous disease (PeVD) represent an as frequent as frequently misdiagnosed and poorly managed condition.<sup>[1-3]</sup> Among the underestimated aspects of the disease, its not rare association with pelvic leaking points leading to lower limb venous refluxes should be mentioned.<sup>[4]</sup> An interesting study enrolling 530 PeVD patients identified refluxes from the internal iliac vein tributaries to the lower limb in 96% of cases, leading to detectable refluxes in the leg superficial and/or deep system in 64% of cases.<sup>[5]</sup>

Graduated compression stockings (GCSs) represent a pillar in lower limb chronic venous disease (CVD) management.<sup>[6]</sup> Nevertheless, there is no clear evidence regarding its use in PeVD in the literature and it is mostly at the discretion of the healthcare professional for each individual case. In the present report, we focus on scarce literature on the specific topic and on the possible rationale for the GCS use in PeVD.

### AVAILABLE LITERATURE

To the best of our knowledge, the only available paper dealing with the topic of GCS use in PeVD management is the one of Gavrilov et al.<sup>[7]</sup> This study included 74 PeVD patients in three groups. The first group included 48 cases of PeVD without lower limb CVD to whom a Class II compression short was given (from the waist to the upper third of the thigh). The second group included 14 PeVD patients without pelvic pain, but with vulvar and lower limb varicose veins, receiving Class II compression shorts along with not precisely defined stockings. The third group included 12 symptomatic PeVD patients without lower limb varicose veins, but with swelling and a not precisely defined “strengthening of the venous pattern” in six of them. The latter group received Class II compression stockings. Compression was kept for 14 days, without specifying the timing and without assessing the exact dosing. The main outcome measure

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was the pelvic pain change, although the second group was reported to be asymptomatic. Instrumental evaluation was also performed by radionuclide venography (RV) and emission computed tomography (ECT). While the first two groups reported both a clinical and instrumental benefit, the third group did not. The investigation is of extreme importance in its pioneering approach, whereas several potential biases should be pointed out in our opinion. First, the study population was, indeed, extremely limited in number and potentially greatly heterogeneous in terms of hemodynamic overload. Second, no clear analysis was performed in the lifestyle along the 14 days of observation for which significantly different outcomes may have been produced. Third, the authors reported the use of Class II stockings, which could mean different mmHg values based on the classification used and not specified in the manuscript. Moreover, no interface pressure measurement was performed to confirm the real pressure exerted. This is of particular importance, particularly for the waist area where different body shapes may lead to different pressure gradients. Finally, compliance to compression was not assessed, making the outcome at 14 days questionable.

In conclusion, the study is to be congratulated for paving the way for further investigations; however, in our opinion, currently it cannot be used to give significant indications in everyday GCS use in PeVD patients.

### POSSIBLE RATIONALE OF GCS USE IN PELVIC VENOUS DISEASE

The same Gavrilov's research group published another interesting paper on PeVD influence on lower limb symptoms, demonstrating a higher risk of leg pain (odds ratio [OR]: 4.23; 95% confidence interval [CI]: 1.57-11.39), edema (OR: 7.42; 95% CI: 2.23-24.78) and heaviness (OR: 5.3; 95% CI: 1.85-15.07) in these patients.<sup>[8]</sup> Interestingly, the literature review reveals GCS efficacy in the control of all these conditions.<sup>[9-11]</sup> Clearly, appropriate compression must be used to obtain valuable results. Dosing compression may have a fundamental role, as per the Lattimer et al.'s study<sup>[12]</sup> showing a GCS dose dependent effect in leg outflow increasing.

Correct sizing and interface pressure measurement is also critical. Indeed, according to a previous publication of our research group, the limb shape may affect the graduated pressure

profile.<sup>[13]</sup> The same publication demonstrated edema control even in healthy subjects exposed to prolonged occupational standing. In this context, GCS may become particularly useful in counteracting a swelling that can find a double origin in both the environmental and pelvic overload.<sup>[13]</sup>

In conclusion, a detailed analysis of the potential GCS benefit and of the related costs in PeVD management is needed before delivering whatever indication concerned. Yet, considering the GCS safety profiles and the related risk/benefit analysis,<sup>[14]</sup> GCS should receive immediate attention in this important, but still underestimated topic of PeVD and related CVD management.

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### REFERENCES

1. Jurga-Karwacka A, Karwacki GM, Schoetzau A, Zech CJ, Heinzelmann-Schwarz V, Schwab FD. A forgotten disease: Pelvic congestion syndrome as a cause of chronic lower abdominal pain. *PLoS One* 2019;14:e0213834.
2. Antignani PL, Lazarashvili Z, Monedero JL, Ezpeleta SZ, Whiteley MS, Khilnani NM, et al. Diagnosis and treatment of pelvic congestion syndrome: UIP consensus document. *Int Angiol* 2019;38:265-83.
3. Khilnani NM, Meissner MH, Learman LA, Gibson KD, Daniels JP, Winokur RS, et al. Research priorities in pelvic venous disorders in women: Recommendations from a multidisciplinary research consensus panel. *J Vasc Interv Radiol* 2019;30:781-9.
4. Malgor RD, Labropoulos N. Pattern and types of non-saphenous vein reflux. *Phlebology* 2013;28 Suppl 1:51-4.
5. Villavicencio JL. Recurrent leg varices and intrapelvic and extrapelvic venous connections: It's anatomy, my dear Watson! *Vascular* 2007;15:61-2.
6. Gianesini S, Obi A, Onida S, Baccellieri D, Bissacco D, Borsuk D, et al. Global guidelines trends and controversies in lower limb venous and lymphatic disease: Narrative literature revision and experts' opinions following the vWINTER international meeting in Phlebology, Lymphology & Aesthetics, 23-25 January 2019. *Phlebology* 2019;34(1 Suppl):4-66.
7. Gavrilov SG, Karalkin AV, Turischeva OO. Compression treatment of pelvic congestion syndrome. *Phlebology* 2018;33:418-24.
8. Gavrilov SG, Moskalenko YP. Does pelvic congestion syndrome influence symptoms of chronic venous disease of

- the lower extremities? *Eur J Obstet Gynecol Reprod Biol* 2019;243:83-6.
9. Lee Y, Kim K, Kang S, Kim JY, Kim SG, Kim T, et al. Compression stocking length effects on oedema, pain, and satisfaction in nursing students: A pilot randomized trial. *Healthcare (Basel)* 2020;8:149.
  10. Shingler S, Robertson L, Boghossian S, Stewart M. Compression stockings for the initial treatment of varicose veins in patients without venous ulceration. *Cochrane Database Syst Rev* 2011;(11):CD008819.
  11. Blättler W, Kreis N, Lun B, Winiger J, Amsler F. Leg symptoms of healthy people and their treatment with compression hosiery. *Phlebology* 2008;23:214-21.
  12. Lattimer CR, Kalodiki E, Kafeza M, Azzam M, Geroulakos G. Quantifying the degree graduated elastic compression stockings enhance venous emptying. *Eur J Vasc Endovasc Surg* 2014;47:75-80.
  13. Giancesini S, Raffetto JD, Mosti G, Maietti E, Sibilla MG, Zamboni P, et al. Volume control of the lower limb with graduated compression during different muscle pump activation conditions and the relation to limb circumference variation. *J Vasc Surg Venous Lymphat Disord* 2020;8:814-20.
  14. Rabe E, Partsch H, Morrison N, Meissner MH, Mosti G, Lattimer CR, et al. Risks and contraindications of medical compression treatment - A critical reappraisal. An international consensus statement. *Phlebology* 2020;35:447-60.