Compression Bulletin 43

SIGVARIS GROUP

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28. Bonn Vein Days	Bonn, Germany	22. – 23. April 2022
22. European Venous Forum (EVF)	Venice, Italy (Hybrid Congress)	30. June – 02. July 2022
XIX World Congress of Phlebology (UIP)	Istanbul, Turkey	12. – 16. September 2022

Stemmer Medical Platform on Phlebology and Compression Therapy
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Elastic Compression Stockings for Prevention of the Post-Thrombotic Syndrome in Patients with and without residual Vein Thrombosis and/or popliteal Valve Reflux

Haematologica. 2021 Sept 9. doi: 10.3324/haematol.2021.279680

Aim
The aim of this study was to report the risk of PTS in relation to therapeutic adherence to elastic compression stockings (ECS) and presence of residual vein thrombosis (RVT), popliteal valve reflux (PVR) or both in the 861 patients who survived at least six months.

Methods
In a prospective cohort study of 869 patients with a proximal DVT that was either unprovoked or associated with transient risk factors, we observed an increased risk of PTS in those with RVT. Two trained physicians who were unaware of other patient's details or study outcomes assessed the adherence to ECS. Patients who used the ECS for > 70 % of daytime for the first year were considered adherent ('stockings' group). Patients who did not accept the advised ECS, discontinued ECS use during the first year, or used the ECS < 70 % of daytime were considered non-adherent ('non-stockings' group).
The main demographic and clinical characteristics of the two groups were compared using standard methods. The hazard ratio (HR) for the effect of ECS on PTS development in the whole population, as well as in patients with and without RVT and/or PVR was estimated using the proportional hazard Cox's regression model.
Patients were advised to wear ECS (30 – 40 mmHg at the ankle) for at least two years and were followed-up for 3 years. They were instructed to report on a booklet the duration they wore the stocking, use of not permitted stockings, and occurrence of adverse effects impairing their use. The Villalta scale was used to assess the PTS development every six months.

Results
Of the 861 patients, 511 (59.3 %) belonged to the 'stockings' group, and the remaining 350 (40.7%) to the 'non-stockings' group. The two groups had substantially comparable demographic and clinical characteristics.
RVT and/or PVR was detected in 539 patients (62.6 %). Of these, RVT alone was found in 299 (55.5 %), PVR alone in 115 (21.3 %) patients, and the combination of RVT with PVR in 125 (23.2 %).
PTS developed in 249 of the 539 patients (46.2 %; severe in 35, 6.5 %) with RVT and/or PVR, and in 90 of the 322 (28.0 %; severe in 11, 3.4 %) without RVT and/or PVR.

PTS developed in 162 of the 511 patients (31.7 %; severe in 19, 3.7 %) in the 'stockings' group, and in 177 of the 350 (50.6 %; severe in 25, 7.1 %) in the 'non-stockings' group (p < 0.001).

In patients with RVT and/or PVR, the 36-month PTS-free survival figures were 35.2 % in the 'non-stockings' group, and 64.0 % in the 'stockings' group (P < 0.001).

Indeed, in our study 48 % of patients with PVR had also RVT, but in the multivariate minimal-significant Cox's model, there was no independent effect of PVR on the incidence of PTS, as well as on the relative efficacy of adequate use of ECS. Our observation is pathophysiologically plausible. Indeed, in the absence of longstanding vascular damage venous hypertension and subsequently PTS are unlikely to occur. This is also consistent with the demonstration that PTS is unlikely to develop in individuals with a limited thrombotic burden and in those with isolated calf DVT.

Our study strongly suggests that in patients with proximal DVT, adequate use of ECS provides a clinically important reduction in any and severe PTS in patients with ultrasound evidence of RVT (with or without PVR) at 3 months, whereas in patients without RVT such an effect is absent. In a clinical context dominated by persistent uncertainty on the necessity for compression therapy to prevent PTS, our study has the potential to revive a stalled discussion.

Conclusions
In conclusion, the results show that the ultrasound assessment of RVT in patients with proximal DVT has the potential to identify those who are likely to benefit from the long-term use of ECS. While awaiting confirmation from properly randomized clinical trials, they are in our opinion plausible enough to inform the long-term management of patients with proximal DVT.

Comments of the Editors
The role of elastic compression stockings (ECS) in proximal deep venous thrombosis (DVT) patients to prevent post-thrombotic syndrome (PTS) is still under discussion. In two recent international consensus documents one recommended against routine compression[1] and the other for immediate compression after diagnosis to reduce pain and symptoms and to consider immediate compression for prevention of PTS[2].

Based on the results of a recent systematic review showing that DVT patients presenting a residual vein thrombosis (RVT) or a popliteal valve reflux (PVR) at six weeks or later also displayed a higher risk of subsequent PTS (compared to patients without these findings), Prandoni et al. report the risk of PTS in relation to therapeutic adherence to ECS and presence of RVT, PVR or both in 861 patients who survived at least six months. The results strongly suggests that in patients with proximal DVT and ultrasound evidence of RVT (with or without PVR) at 3 months, adequate use of ECS is followed by a significant reduction of PTS. In patients with RVT and/or PVR, PTS developed in 34.8% in the ECS group, and in 64.0% in the non-ECS group
($p < 0.001$). In patients without RVT no effect of ECS on the incidence of PTS is present.

This is the first time that the preventive effect of compression for development of PTS could be demonstrated in a group of patients with a high risk for PTS after proximal DVT. As RVT can earliest be diagnosed after 3 months, early compression is indicated in all proximal DVT patients for at least 3 months.

Literature:
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Pinar Borman, Esra G. Koyuncu, Aysxegu¨ l Yaman, Emel Calp, Funda Koc, Ruveyda Sargut and Sevilay Karahan

The Comparative Efficacy of Conventional Short-Stretch Multilayer Bandages and Velcro Adjustable Compression Wraps in Active Treatment Phase of Patients with Lower Limb Lymphedema

Lymphatic Research and Biology: Volume 19, Number 3, 2021

Aim
Compression is the most important component of complete decongestive therapy (CDT), but there is no standard best method for applying compression. The aim of this study was to evaluate the comparative efficacy of conventional multilayer short-stretch bandaging, and a Velcro adjustable compression wrap with regard to volume reduction, ultrasonographic measurements, functional-status, and quality of life (QoL) in the active CDT period of patients with lower limb lymphedema.

Methods
The demographic and clinical variables of lower limb lymphedema patients were recorded. All patients received skin care education, manual lymphatic drainage, and supervised lymphedema exercises, and were randomly allocated to Group1 (multilayer short-stretch bandaging-Rosidal-K) or to Group 2 (adjustable-compression-velcro-wrap-Circaid Reduction-kit) for a duration of 3 weeks with 15 sessions. Limb volumes were assessed by Perometer. Ultrasonographic measurements included subcutaneous soft tissue thickness. The functional disability and QoL were evaluated by the Lower Extremity Functional Scale and LYMQOL-Leg (Lymphedema Quality of Life Questionnaire-Leg), respectively, at baseline, after CDT, and at first-month follow-up.

Results
Thirty-six patients (10 male and 26 female) with mean age of 51.6 years were included. Fourteen patients had primary and 22 patients had secondary lymphedema. The median duration of lymphedema was 68 months. Significant improvements in volumes and ultrasonographic measurements were observed in both groups at the end of therapies, and improvements sustained up to a month. Appearance, symptoms, and overall QoL-subscores were improved only in Group 2.

Conclusions
In conclusion, adjustable compression velcro-wrap performed as a part of CDT can greatly reduce the volume similar to conventional multilayer bandages, as well as improve the QoL. It can be a comfortable alternative to the conventional multilayer bandages in the active treatment phase of the CDT.

Comments of the Editors
In this prospective randomized and controlled study the authors included 40 patients with primary or secondary lymphedema which were treated in the initial decongestion phase by complete decongestive therapy including skin care education, manual lymphatic drainage, and supervised lymphedema exercises. For compression treatment the patients were randomized into one group with multilayer short-stretch bandaging and one group with adjustable-compression-velcro-wraps. After three weeks, at the end of the initial phase, there was a significant leg volume decrease in both groups without a significant difference between the groups. The treatment was performed in both groups by experienced therapists.

This study shows, despite the small number of included patients, that initial decongestion in lymphedema is not only possible by bandaging but in the same way by velcro wraps. In a similar study Damstra et al. could show that in patients with moderate to severe lymphedema of the legs, velcro wraps achieved even a significantly more pronounced reduction in volume after 24 hours than inelastic multicomponent bandages[1]. In this study patients were able to apply and adjust the device after being instructed in its use and after an initial 2-hour period of wear[1].

The problem of bandage systems is the pressure drop when the edema decreases and the frequent inability of the patients to readjust the bandaging themselves. This is possible with velcro wraps, giving the patients the ability to maintain a sufficient compression effect for a longer time.

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Marianne G. De Maeseneer, Stavros K. Kakkos, Thomas Aherne, Niels Baekgaard, Stephen Black, Lena Blomgren, Athanasios Giannoukas, Manjit Gohel, Rick de Graaf, Claudine Hamel-Desnos, Arkadiusz Jawien, Aleksandra Jaworucka-Kaczorowska, Christopher R. Lattimer, Giovanni Mosti, Thomas Noppeney, Marie Josee van Rijn, Gerry Stansby

Editor's Choice – European Society for Vascular Surgery (ESVS) 2022 Clinical Practice Guidelines on the Management of Chronic Venous Disease of the Lower Limbs

Eur J Vasc Endovasc Surg (2022) 63, 184-267

Aim
The European Society for Vascular Surgery (ESVS) has prepared new guidelines for the treatment of patients with CVD, to update the existing ESVS guidelines on the management of CVD, which were published in 2015.

The focus of the present guidelines is on CVD of the lower limbs, related to pathology of the superficial, perforating, and deep veins of the lower limbs as well as to abdominal and pelvic venous pathology. The guidelines report several recommendations on diagnosis and treatment of these pathologies in different chapters, with details on health questions and population described in the related text.

Methods
Members of the Guideline Writing Committee (GWC) were selected by the ESVS to represent clinicians involved in the treatment of CVD and included vascular surgeons, vascular physicians, an interventional radiologist, and a gynecologist - obstetrician. All members of the GWC were involved in selecting and rating the evidence for each of the different chapters and subsections under their responsibility and all GWC members were involved in formulating the final recommendations.

A comprehensive literature search of articles published was performed using MEDLINE (through PubMed), Embase, Cardiosource Clinical Trials Database, and the Cochrane Library databases between 1 January 2013 and 30 June 2020, for relevant papers published in English, only peer reviewed, published literature and studies presenting predefined outcomes were considered. The European Society of Cardiology (ESC) system was used for grading evidence and recommendations. A, B, or C reflects the level of current evidence, and the strength of each recommendation was then determined to be class I, IIa, IIb, or III.

Results
In this updated guideline of the ESVS a special section about compression with the four different modalities: elastic compression stockings (ECS), elastic and inelastic bandages, adjustable compression garments (ACG) and intermittent pneumatic compression (IPC) devices is included in the chapter on conservative treatment of chronic venous diseases (CVD).

For patients with symptomatic CVD, the guideline recommends ECS, exerting a pressure of at least 15 mmHg at the ankle, to reduce venous symptoms (class I, level B).

Comment: This is important because it is a strong recommendation for the lowest compression class in one of the most frequent indications for compression stockings. In the recent German guideline, it is recommended: ***The lowest effective CCL shall always be preferred. This supports adherence to compression therapy[1].***

For patients with chronic venous disease and oedema (CEAP clinical class C3), the guideline recommends compression treatment, using below knee elastic compression stockings, inelastic bandages or ACG, exerting a pressure of 20 – 40 mmHg at the ankle, to reduce oedema also on a class I, level B.

Comment: This recommendation summarizes all kinds of edema associated with venous disease. However, we

might differentiate low intensity edema which manifests as evening ankle edema or edema after prolonged sitting or standing from severe edema which may already be present in the morning and may show significant circumference differences between the affected and the not effected leg. In the first case studies have shown effectivity also by 15 – 20 mmHg MCS1,2 whereas the severe edema patients may need stronger compression at least in the initial edema reduction phase.

For patients with chronic venous disease and lipodermatosclerosis and/or atrophie blanche (CEAP clinical class C4b), the guideline recommends using below knee ECS, exerting a pressure of 20 – 40 mmHg at the ankle, to reduce skin induration (class I, level B). For patients with post-thrombotic syndrome, the guideline recommends considering below knee ECS, exerting a pressure of 20 – 40 mmHg at the ankle, to reduce severity (class IIa, level B) and adjuvant intermittent pneumatic compression (class IIb, level B).

Comment: These recommendations provide a wider range of pressure values which allow to modify compression to the clinical needs of the patient and considering adherence.

For patients with active venous leg ulceration (VLU), the guideline recommends multilayer or inelastic bandages or ACG, exerting a target pressure of at least 40 mmHg at the ankle, to improve ulcer healing (class I, level A) and for patients with active VLU of small size and recent onset, to consider superimposed elastic compression stockings exerting a target pressure up to 40 mmHg at the ankle (class IIa, level B). For patients with healed venous leg ulceration, long term compression therapy should be considered to reduce the risk of ulcer recurrence (class IIa, level B).

In daily practice the use of two-layer ulcer stocking not only in small but also at least in medium size and ulcers of longer duration has become a standard procedure because it is cost-effective and can be performed by the patients themselves easily. In the recent German guidelines of compression therapy, it is recommended that after the initial decongestion phase, in certain VLU patients the treatment should be changed from bandages to a two-layered ulcer compression stocking system for long-term therapy[1].

Comments of the Editors

In summary the new ESVS Guideline provides a modern view not only of diagnosis and invasive treatment of CVD but also of compression therapy.

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