

Compression stockings after deep vein thrombosis: Where is the evidence?

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Introduction

In 2014, the results were published of a randomised placebo-controlled trial to evaluate the effects of compression stockings after deep venous thrombosis (DVT to prevent a post thrombotic syndrome (PTS). 806 patients were randomly assigned. Treatment allocation was masked from patients, health-care providers, study personnel and study statisticians. The outcome was clearly defined and the surveillance was active and of clinically appropriate duration. The authors conclude that the findings of this study do not support routine wearing of elastic compression stockings after deep venous thrombosis. This study is generally referred to as the *SOX-trial*.¹ Shortly after its publication, this study was analysed and, on behalf of the German Society of Phlebology, the authors state that wearing compression stockings after deep venous thrombosis of the leg is still advisable.² An expert opinion, based on many years of experience and the result of two systematic reviews and meta-analyses, states that the long term use of compression stockings may reduce the incidence and severity of a post-thrombotic syndrome.³ This article reviews the literature and tries to answer the question: where is the evidence?

Compression stockings after DVT to prevent PTS: Guidelines

In 2012 a paper was published in *Chest*, the journal of the American College of Chest Physicians, in which evidence-based clinical practice guidelines on antithrombotic therapy and the prevention of thrombosis are provided.⁴ The authors suggest the use of compression stockings in patients with acute symptomatic DVT of the leg. In addition, it is suggested that compression stockings should be worn for two years and beyond that if patients have developed PTS and find the stockings helpful. Also in 2012, the UK National Institute for Health and Care Excellence (NICE) published guidelines on venous thromboembolic diseases

(VTE).⁵ It is recommended to offer below-knee graduated compression stockings with an ankle pressure greater than 23 mmHg to patients with proximal DVT a week after diagnosis or when swelling is reduced sufficiently and if there are no contraindications. Patients should be advised to continue wearing the stockings for at least two years. In 2015 the NICE guidelines are updated and now it is recommended that elastic graduated compression stockings should not be offered to prevent post-thrombotic syndrome or VTE recurrence after a proximal DVT.⁶ Shortly after that, also the 2012 US-guidelines are updated.⁷ For patients with acute DVT of the leg, it is now suggested that compression stockings to prevent PTS should not be routinely used. In other countries, like Australia, New Zealand, Germany, France and the Netherlands, guidelines still recommend the use of graduated compression stockings after DVT to prevent PTS.⁸⁻¹¹

Compression stockings after DVT to prevent PTS: systematic reviews and meta-analyses

After the publication of the SOX-trial, five systematic reviews with meta-analyses were published in which the SOX-trial was included.¹²⁻¹⁶ This high number of reviews not only illustrates the increasing recognition of PTS as a long-term complication of DVT, it also demonstrates a clear need for evidence-based information on the best treatment. In addition, the number of reviews demonstrates the confusion among clinicians on this complication with a significant impact on quality of life and major health economic implications. Baldwin et al. state that up to half of the patients with proximal DVT will develop PTS despite optimal anticoagulant therapy.¹⁷ Although much has been published to date, the reviews of the recent literature are very uniform in their conclusions. They can best be summarised with some of them, which are listed below: i) *the findings should be interpreted with caution and hence more large-scale and well-designed RCT's are still warranted*;¹² ii) *the evidence is too weak to draw a reliable conclusion and further randomised, double-blind, placebo-controlled multicentre trials with larger sample size are needed*;¹³ iii) *use of elastic compression stockings does not significantly reduce the development of post thrombotic syndrome, but more study is needed*;¹⁴ iv) *low-quality evidence suggests that elastic compression stockings may reduce the occurrence of PTS after DVT but large RCT's are needed to*

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Conflicts of interest: JS is a retired 3M employee and invented and co-developed the 3M Coban 2 Layer compression systems and holds a master's degree in evidence-based health care from the University of Oxford.

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confirm these findings because of current lack of high quality evidence and considerable heterogeneity.¹⁶

Burgstaller et al. summarise their findings with the statement that there is evidence favouring compression stockings, but that there is also evidence showing no benefit of compression stockings.¹⁵

Discussion

The conclusions of the presented reviews are obvious; more research on compression to prevent PTS is needed. However, after the SOX-trial with over 800 patients included, it can be questioned how realistic the expectation is that in the near future a similar large double-blinded randomised controlled trial will be executed that fulfils all needs. In a journal editorial in the issue in which one of the mentioned reviews was published,¹⁵ Ten Cate-Hoek states that, besides compression therapy, more therapeutic options are needed for prevention and treatment of PTS. She suggests to take action and to assess the possibilities ahead of us, instead of trying to solve the current conundrum around elastic compression therapy.¹⁸ For the time-being, the only reasonable and unfortunately not evidence-based direction lies in a quote from the Christian author Elisabeth Elliot-Howard (1926-2015): *don't dig up in doubt what you planted in faith*.

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