## **Compression and DVT**

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## No conflict of interest

# Acute DVT - a Cinderella indication?



## Happy end with Mr Compression?



# Suddenly bad step-mother came back!





# Skip the compression stockings following DVT

Although commonly used, compression stockings do not effectively prevent post-thrombotic syndrome.

#### **PRACTICE CHANGER**

Do not recommend elastic compression stockings (ECS) to decrease the incidence of post-thrombotic syndrome (PTS) after deep vein thrombosis (DVT).<sup>1</sup>

# Graduated compression stockings to treat acute leg pain associated with proximal DVT

#### A randomised controlled trial

Susan R. Kahn<sup>1</sup>; Stan Shapiro<sup>1,2</sup>; Thierry Ducruet<sup>1</sup>; Philip S. Wells<sup>3</sup>; Marc A. Rodger<sup>3,4</sup>; Michael J. Kovacs<sup>5</sup>; David Anderson<sup>6,7</sup>; Vicky Tagalakis<sup>1</sup>; David R. Morrison<sup>1</sup>; Susan Solymoss<sup>8</sup>; Marie-José Miron<sup>9</sup>; Erik Yeo<sup>10</sup>; Reginald Smith<sup>11</sup>; Sam Schulman<sup>12,13</sup>; Jeannine Kassis<sup>14</sup>; Clive Kearon<sup>12</sup>; Isabelle Chagnon<sup>15</sup>; Turnly Wong<sup>16</sup>; Christine Demers<sup>17</sup>; Rajendar Hanmiah<sup>18</sup>; Scott Kaatz<sup>19</sup>; Rita Selby<sup>20</sup>; Suman Rathbun<sup>21</sup>; Sylvie Desmarais<sup>22</sup>; Lucie Opatrny<sup>23</sup>; Thomas L. Ortel<sup>24</sup>; Jean-Philippe Galanaud<sup>25</sup>; Jeffrey S. Ginsberg<sup>12</sup>

Thromb Haemost 112/6 2014

- Subanalysis of the SOX-Study
- No pain relieving effect of compression in acute DVT
- Actually "baseline pain" was assessed
   3 weeks after acute DVT

Letter to the Editor: Partsch H. Thromb Haemost. 2015 Mar 30;113(4):906-7

## Rebuttal to Partsch et al. Kahn et al. Thromb Haemost 2015; 113: 906.

- ...because the first follow-up assessment occurred at 14 days after randomisation, we were unable to directly evaluate if ECS had a beneficial or detrimental effect on pain before this time point".
- "Our study design and findings should reassure clinicians that ECS do not have a role in the management of acute pain associated with DVT."

## 2-3 weeks AFTER acute DVT

- Pain has disappeared,
- Patient has missed the beneficial experience of good compression in the initial stage
- Patient is poorly motivated to continue with compression
- This is the reason for ongoing poor compliance

# Clinical severity after DVT is a risk factor for PTS

- PTS starts with acute DVT, not 3 months later
- Residual signs and symptoms 1 month after DVT are strongly predictive of PTS
- Less pain and swelling after acute DVT:
   less severe PTS

## Reduction of Leg swelling

- Most impressive effect of compression:
- -not considered in SOX-Study and in subsequent publication



## Aim of compression therapy

- 1. Reduction of pain and swelling in acute DVT
- 2. Reduction of PTS



CHEST

Supplement

ANTITHROMBOTIC THERAPY AND PREVENTION OF THROMBOSIS, 9TH ED: ACCP GUIDELINES

Antithrombotic Therapy for VTE Disease

CHEST 2012; 141(2)(Suppl):e419S-e494S

## Recommendation 4.1.

In patients with acute symptomatic DVT of the leg, we suggest the use of compression stockings (Grade 2B).

Compression in acute DVT (Patient orientated outcome)

- Reduces swelling
- Reduces pain
- Improves QOL
- Facilitates immediate ambulation

Partsch H, Blättler W. J Vasc Surg. 2000 Nov;32(5):861-9 Blättler W, Partsch H. Int Angiol. 2003 Dec;22(4):393-400 Jünger M et al. Curr Med Res Opin . 2006 ; 22 (3): 593 – 602 Roumen Klappe EM J Thromb Thrombolysis 2009; 27(4):400 - 405 .

## **Bed Rest versus Early Ambulation**

Liu Z et al

#### Liu Z et al. PLOS ONE | DOI:10.1371/journal.pone.0121388 April 10, 2015

### PAIN (VAS-CHANGE)



ambulation + compression

## Compression in DVTa European Tradition

Blättler W, Gerlach H.:540 TVT-Pat.

92% Home therapy with compression

Arpaia G et al.: 1931 DVT (Hospital):

67% Stockings at dismission

Ouvry P et al.: 761 Vascular specialists:

94% Compression in DVT

- 57% Stockings (64% 15-20 mmHg)
- 36% Bandages

#### Roche-Nagle G et al: 225 clinicians, 150 DVT- Patients

67% Compression after DVT

75% Senior staff

21% Junior staff

Eur J Vasc Endovasc Surg 2005; 30, 319–324 J Thromb Thrombolysis; 2009 Nov;28(4):389-93 J Mal Vasc; 2012 Jun;37(3):140-5 Phlebology\_2010 Apr;25(2):72-8 ITALY

GERMANY

FRANCE

IRELAND

## Kayssi A, Roche Nagle G et al. CJEM. 2015 May;17(3):248-52

- Canadian emergency medicine staff physicians and residents (*n*=471) to investigate their attitudes toward the prescription of ECS post-diagnosis of DVT
- Although all patients noted symptomatic relief with ECS, only 50% were prescribed stockings by an emergency or family doctor, and 69% of those patients wore the stockings on a daily basis

# Aim of compression therapy

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- 2. Reduction of PTS





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#### Antithrombotic Therapy for VTE Disease

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- We suggest compression stockings to prevent the postthrombotic syndrome (Grade 2B).
- Remarks: Compression stockings should be worn for 2 years, and we suggest beyond that if patients have developed PTS and find the stockings helpful.

## Medical compression stockings prevent PTS



Musani MH et al. Am J Med. 2010 Aug;123(8):735-40 Kanaan AO et al. Thrombosis 2012. Compression stockings to prevent post-thrombotic syndrome: a randomised placebo-controlled trial. (SOX-trial)

Kahn S et al

## THE LANCET

2014 Mar 8;383(9920):880-8.

## Outcome



PTS	ECS	Plac
after 2 y	N= 409	N=394
Ginsberg	14,2%	12,7%
Villalta >5	51,3%	51,4%
Ulcers	17 (4,2%)	16 (4,1%)
1 month	2	5

## Some problems with SOX

- Villalta and Ginsberg scales are non-specific, subjective outcome parameters

   no CEAP, VCSS, no objective measurements
- Stockings (ECS) sent by mail
  - Start of compression > 2 weeks after DVT
  - Questionable advice how to apply ECS (30-40 mmHg!)
- Compliance
  - -55,6% used ECS > 3 times /week after 2 y
  - 59% of ECS users were uncertain wearing ECS

Labropoulos N, Gasparis AP, Caprini JA, Partsch H. Lancet. 2014 Jul 12;384(9938):129-30.

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## Conclusions

- PTS = Inflammatory disease of vein wall starting in acute DVT
- Compression reduces pain and swelling in acute DVT =antiinflammatory effect, more related to vein wall than to the clot
- Ongoing compression to maintain these effects
- Start with compression + mobilization during acute phase of DVT is essential

## Make Cinderella smile again!



- DVT is a rewarding indication for compression
- Satisfied patients
  - Less pain
  - Less swelling
  - Improved walking
  - Better QOL

## More details on compression:



#### www.icc-compressionclub.com



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