

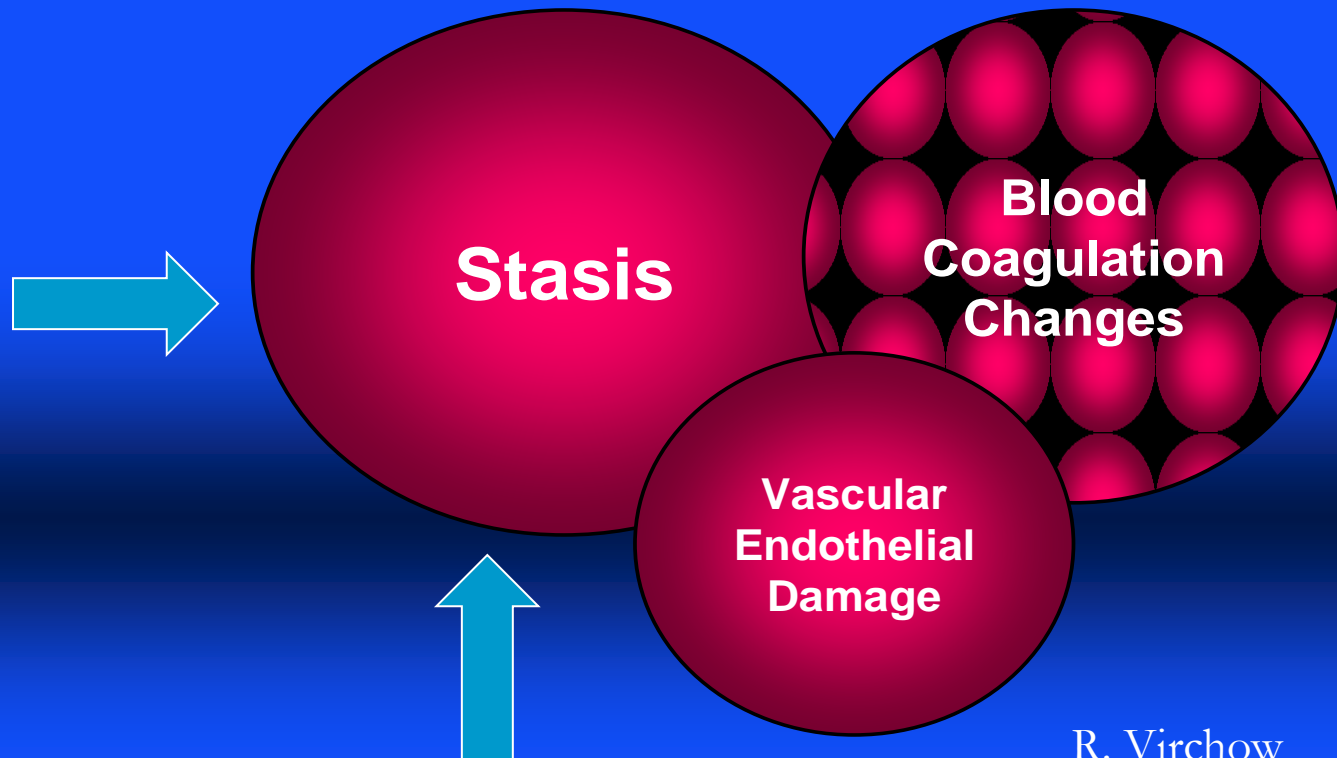
**Place de la compression médicale dans
la prévention et le traitement des
thromboses veineuses profondes des
membres inférieurs**

Hugo Partsch

JIFA, Paris, Feb 2013

Compression= Basis of mechanical prophylaxis

Venous Thromboembolism



R. Virchow

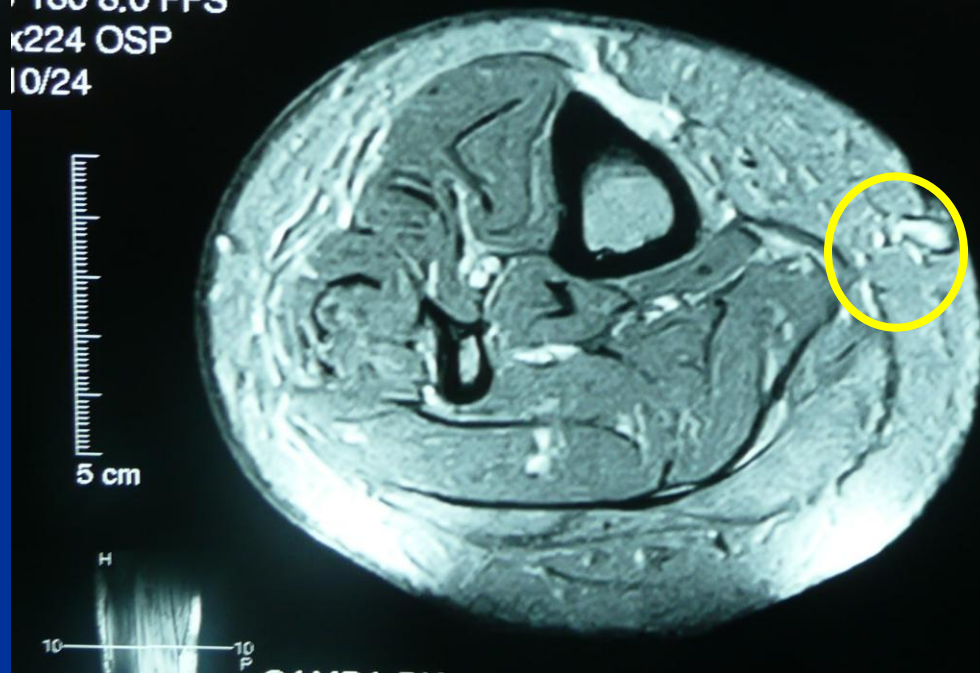
SG 550/21.0 FA;17
180 8.0 FFS
k224 OSP
10/24



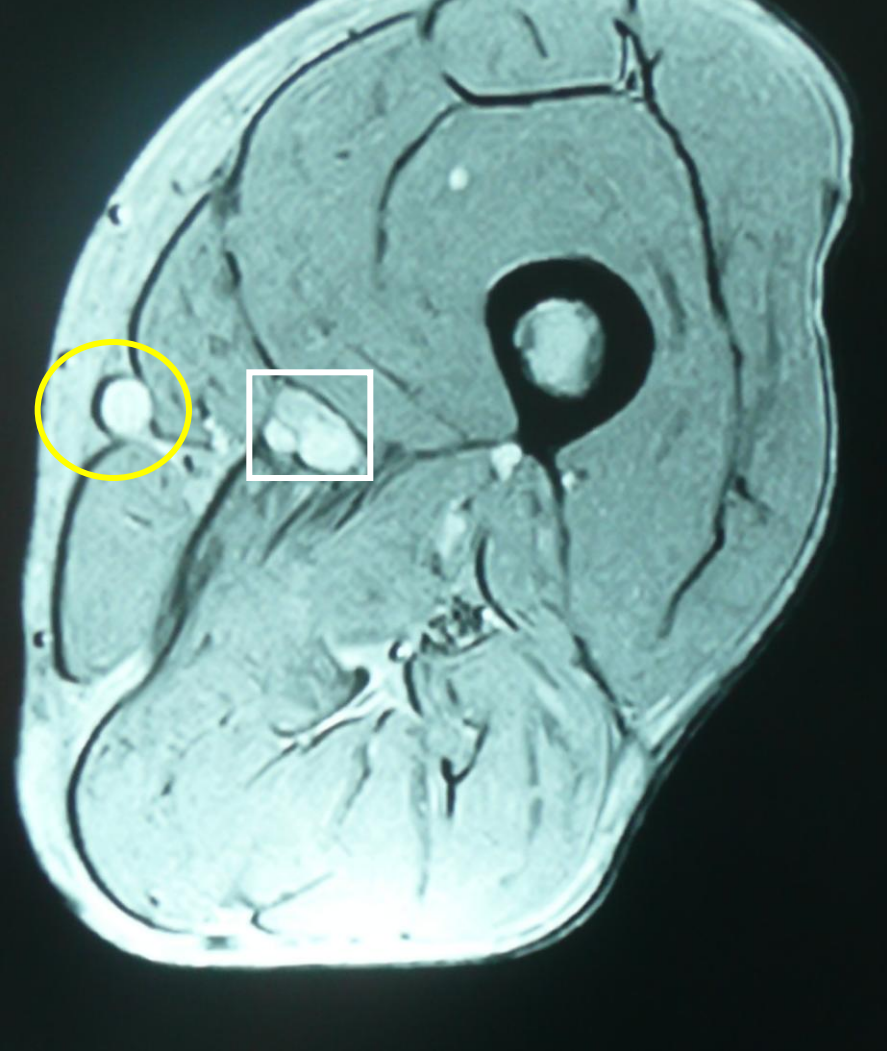
SUPINE POSITION
Lower leg

SG 550/21.0 FA;17
180 8.0 FFS
k224 OSP
10/24

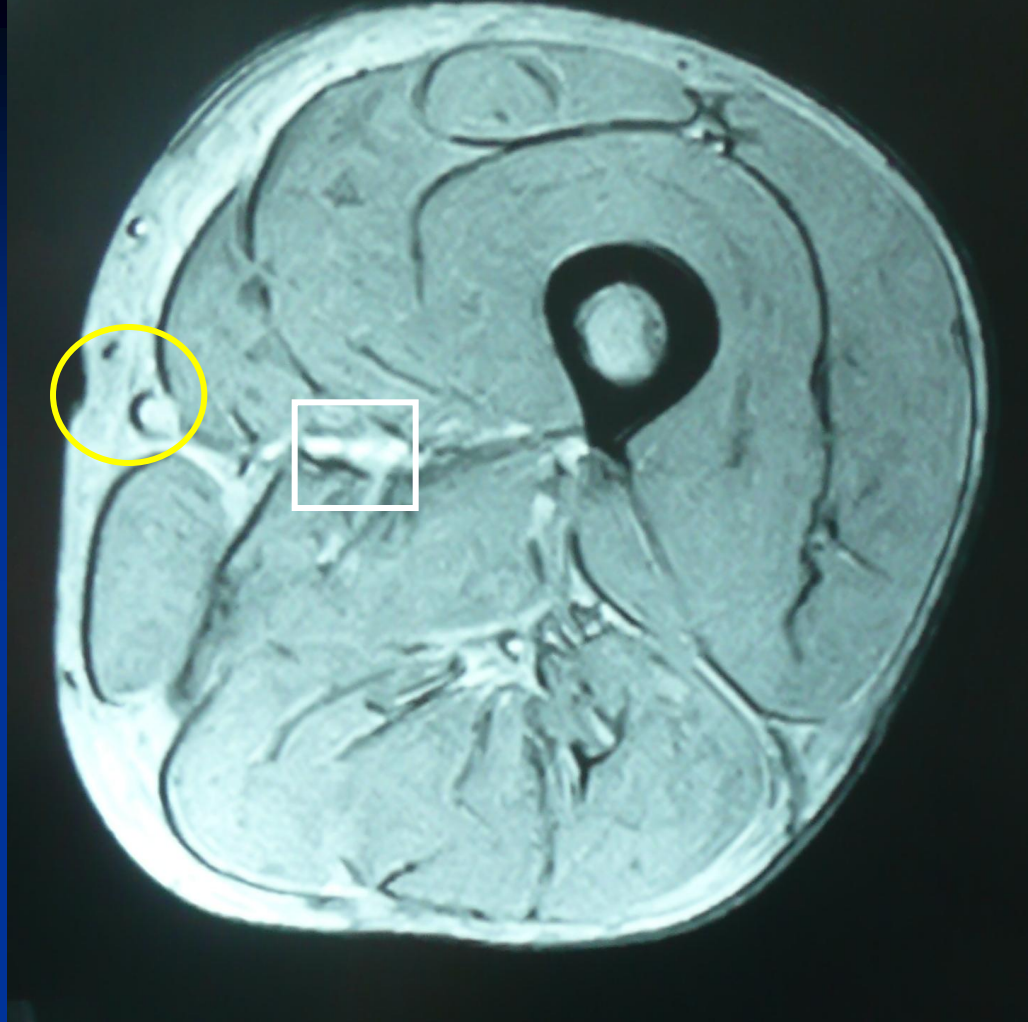
No compression



Stocking 18 mm Hg



No compression



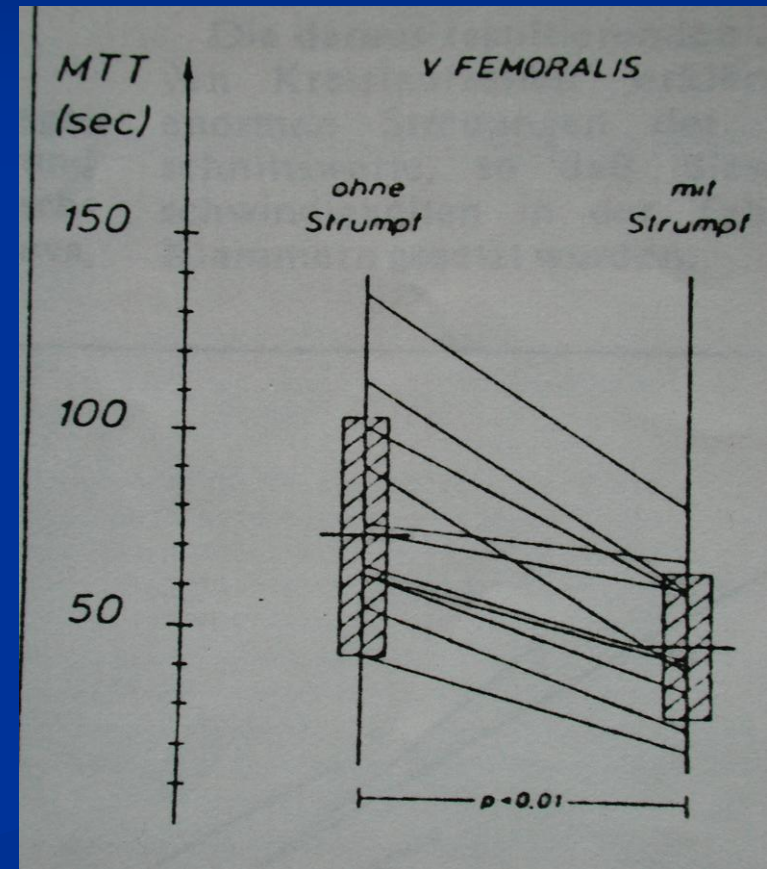
Struwa® thigh stocking, local pressure 6 mm Hg

SUPINE POSITION

Upper leg

Increase of venous flow velocity (Mean transit time)

- Thrombo-prophylaxis
Stockings (15 mmHg),
thigh-long
- Venous flow velocity x
1,5



TPS stockings effective?

- In spite of some experimental evidence
- Evidence from clinical studies decreasing for stockings
- CLOT I*: in stroke patients stockings are ineffective
- CLOT II**: Thigh length better than knee length
- CLOT III***: IPC still ongoing

*Lancet. 2009; 373: 1958-1965

**Ann Intern Med. 2010; 153:553-562.

***Trials 2012, 13:26

ACCP, Chest 2012

In surgical high risk patients...

- we suggest that mechanical prophylaxis with elastic stockings (ES) or IPC should be added to pharmacologic prophylaxis (Grade 2C) .
- in high risk for major bleeding complications we suggest use of mechanical prophylaxis, preferably with IPC, over no prophylaxis until the risk of bleeding diminishes and pharmacologic prophylaxis may be initiated (Grade 2C).

Therapy of Deep vein thrombosis

Anticoagulation

LMWH,
Vit K-Antag.

Compression

Bandages,
Stockings

Mobilisation (mobile pts)

Walking
exercises

Compression + walking

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



CHEST

Supplement

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

Antithrombotic Therapy for VTE Disease

Antithrombotic Therapy and Prevention of Thrombosis,
9th ed: American College of Chest Physicians
Evidence-Based Clinical Practice Guidelines

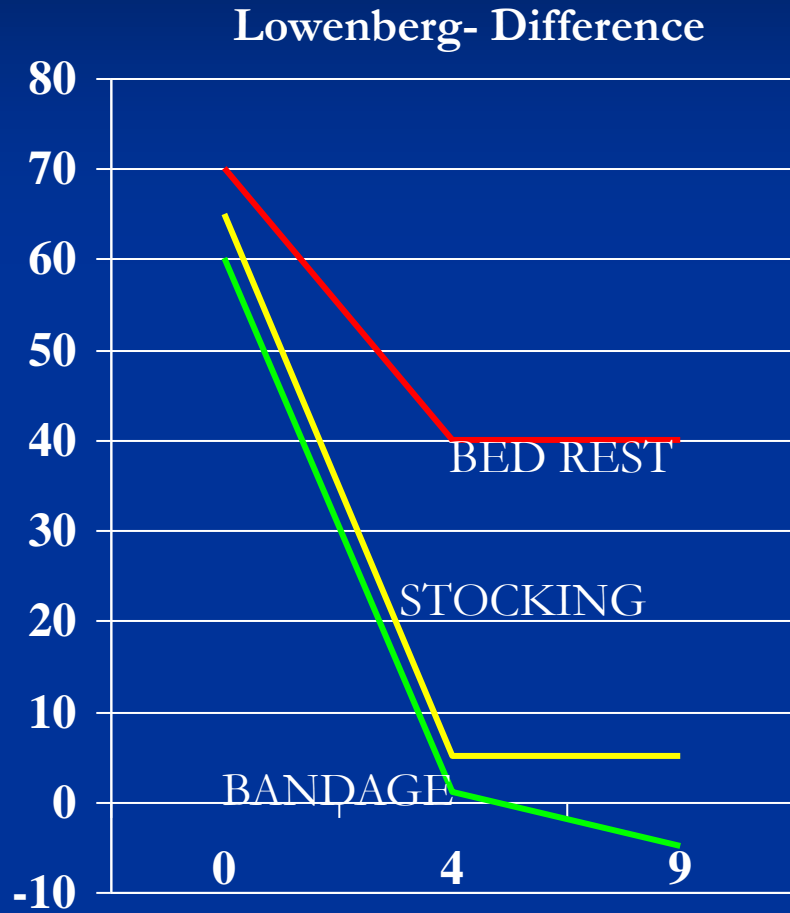
*Clive Kearon, MD, PhD; Elie A. Akl, MD, MPH, PhD; Anthony J. Comerota, MD;
Paolo Prandoni, MD, PhD; Henri Bounameaux, MD; Samuel Z. Goldhaber, MD, FCCP;
Michael E. Nelson, MD, FCCP; Philip S. Wells, MD; Michael K. Gould, MD, FCCP;
Francesco Dentali, MD; Mark Crowther, MD; and Susan R. Kahn, MD*

CHEST 2012; 141(2)(Suppl):e419S–e494S

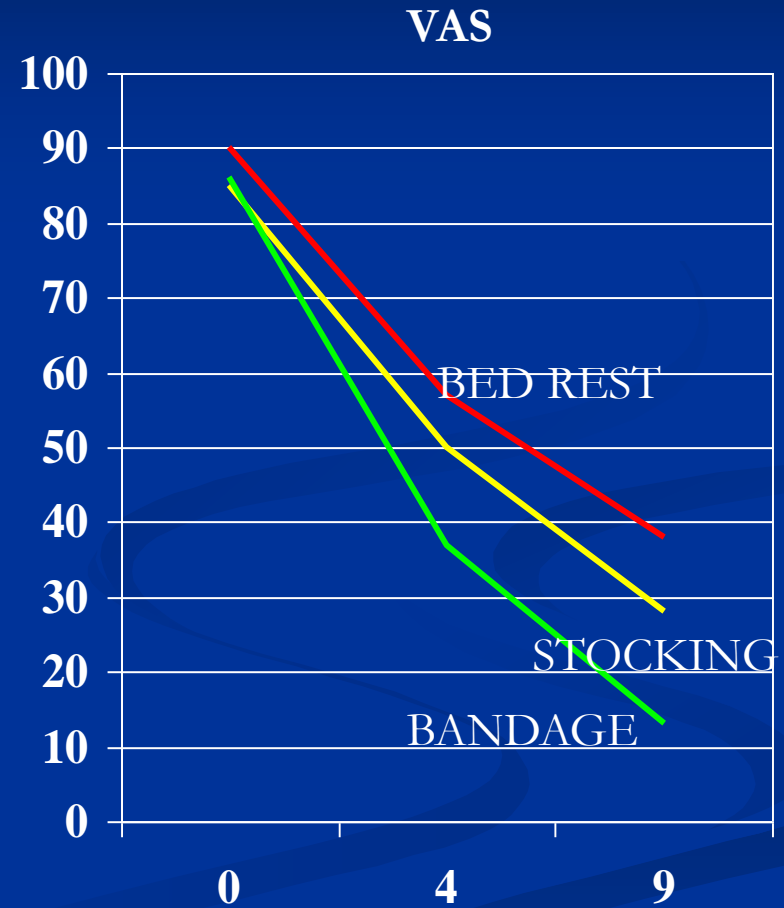
Immediate compression+ walking in acute DVT

- Faster reduction of pain
- Faster reduction of swelling
- Faster improvement of QOL

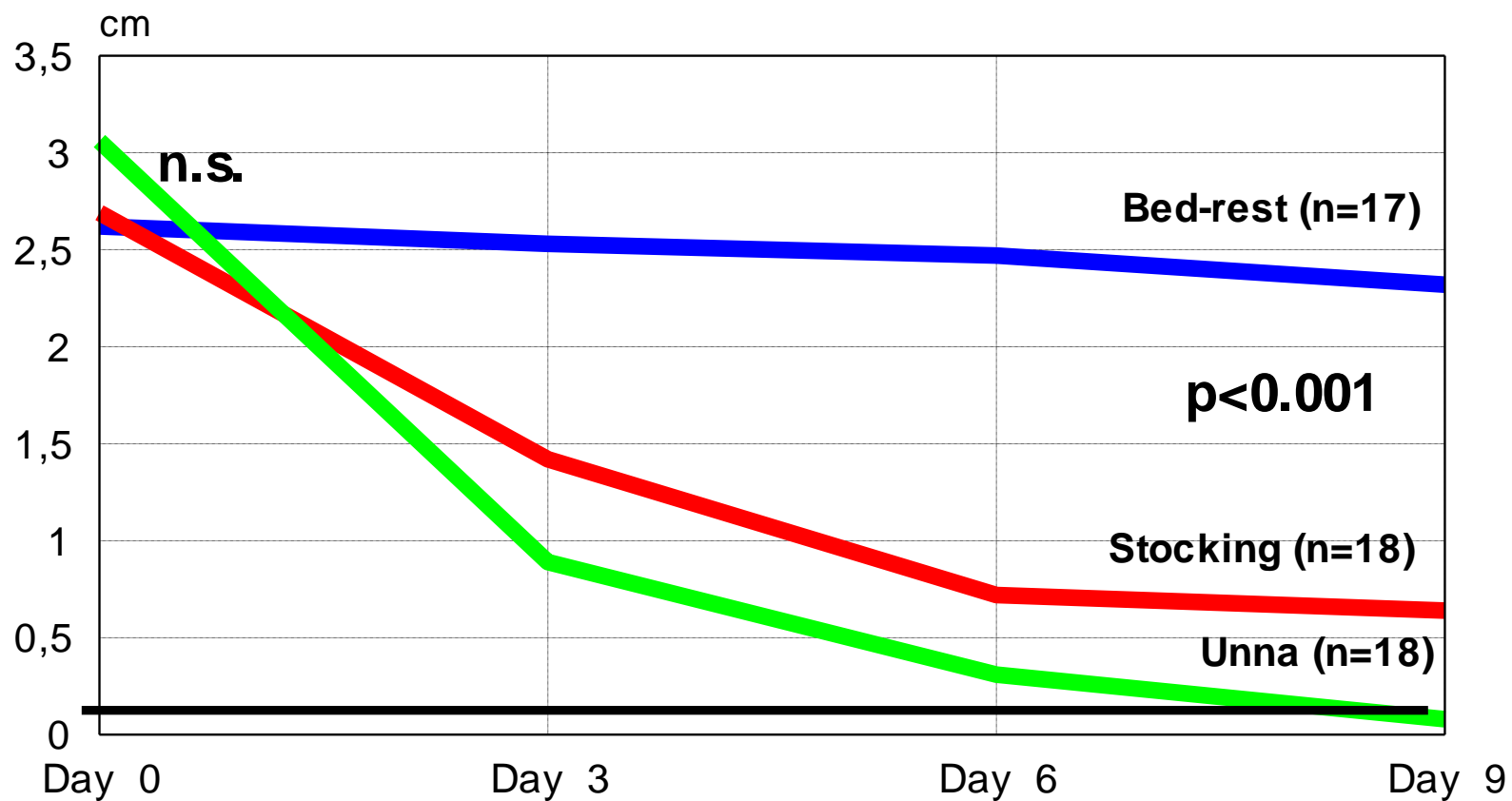
Faster pain-reduction



TAGE



Difference of leg circumference (cm)



Why are mobile patients
with DVT still put into
bed?

**FEAR OF
PULMONARY EMBOLISM**

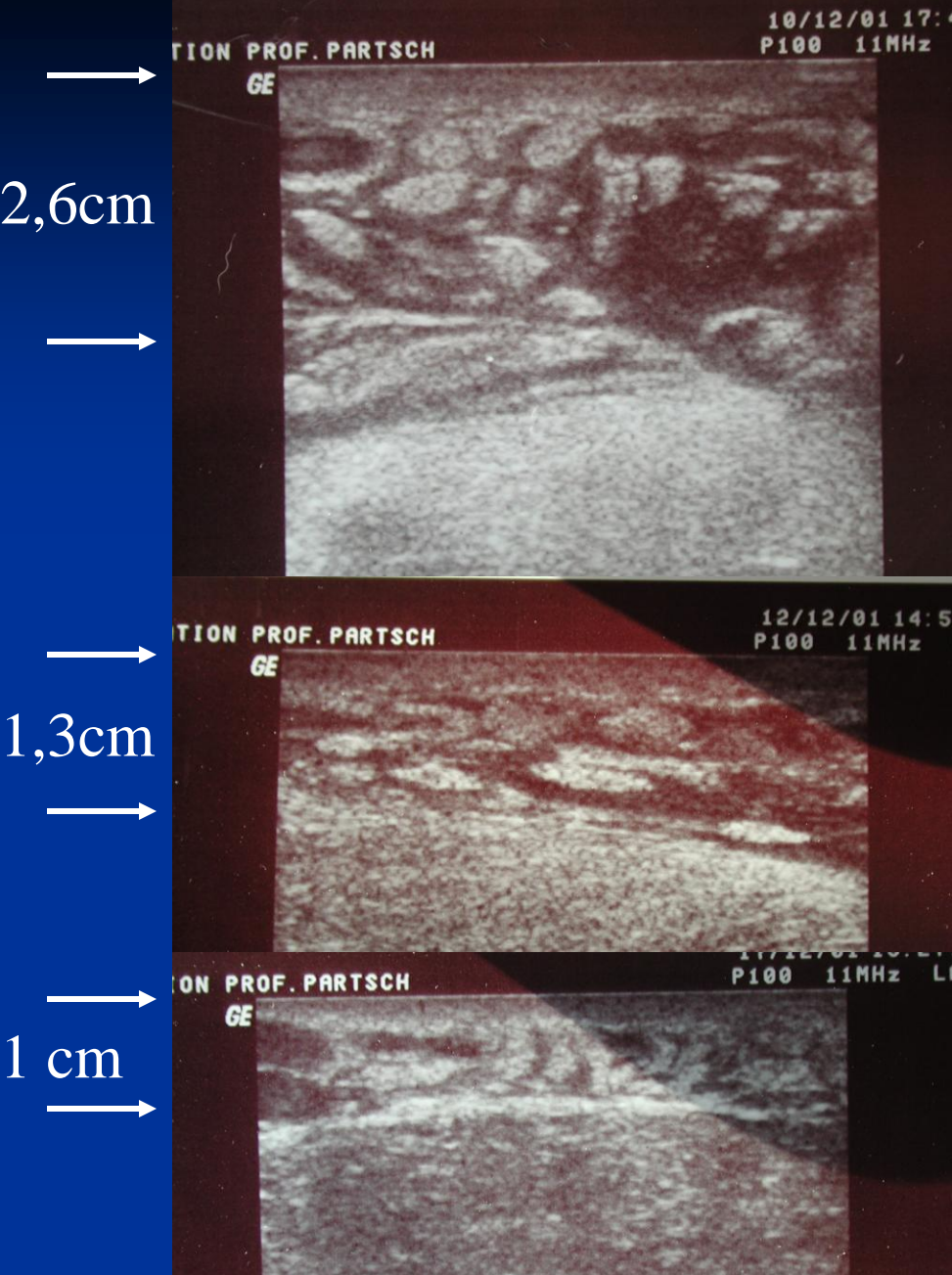
1289 consecutive patients with DVT
(28 % pelvis, 53% thigh, 19% leg)

1. Pulmonary emboli (V/Q-scan)	53% proximal DVT 35% distal DVT
2. New emboli (asymptomatic, V/Q-scan)	6-7% proximal DVT 3% distal DVT
3. Fatal events (all autopsy)	17 (12 malignoma, 3 PE, 2 cardiac)
4. Malignant disease	24% iliac, 17% thigh, 10% leg 1/3 newly detected !
5. Major bleeding HIT II	1 % 3 ‰

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3. Fatal events (all autopsy)	<div style="border: 1px solid black; padding: 5px; background-color: #008080; color: white; width: fit-content; margin: 0 auto;"> <p>1.3% PE: 0,16%</p> </div>
4. Malignant disease	24% iliac, 17% thigh, 10% leg 1/3 newly detected !
5. Major bleeding HIT II	1 % 3 ‰

How does compression
work?



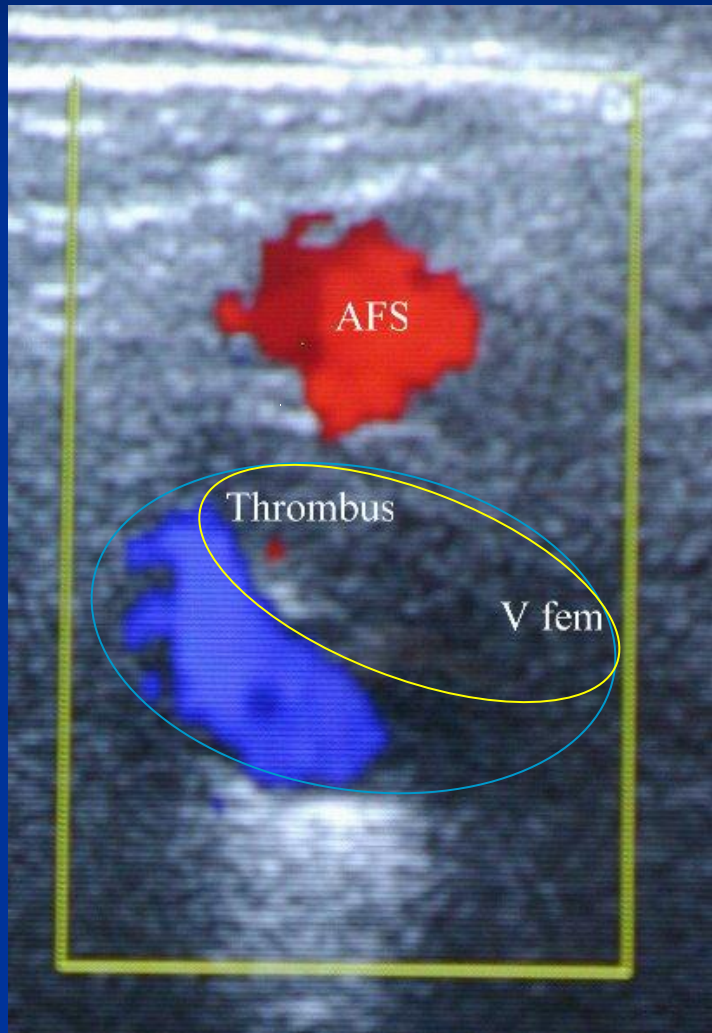
Oedema

- Water filled clefts
- After 2 days compression:
(Reduction of calf circumference: 6,5 cm)
- After 7 days compression
(Reduction of calf circumference: 12 cm)

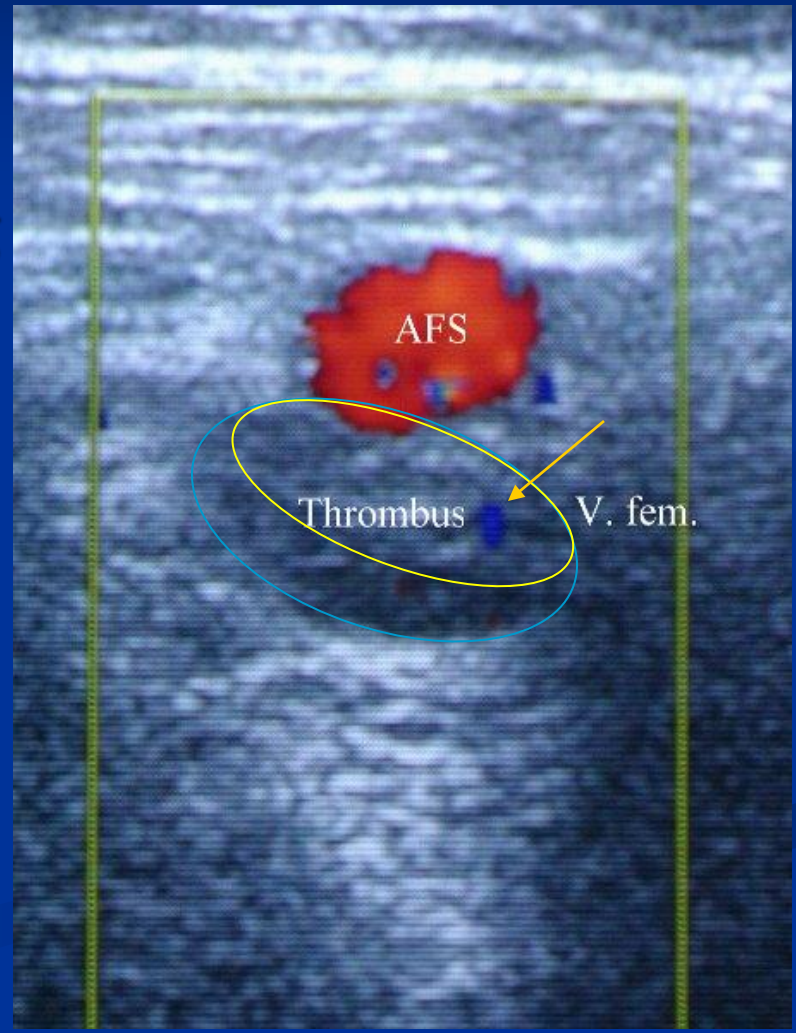
Thigh compression



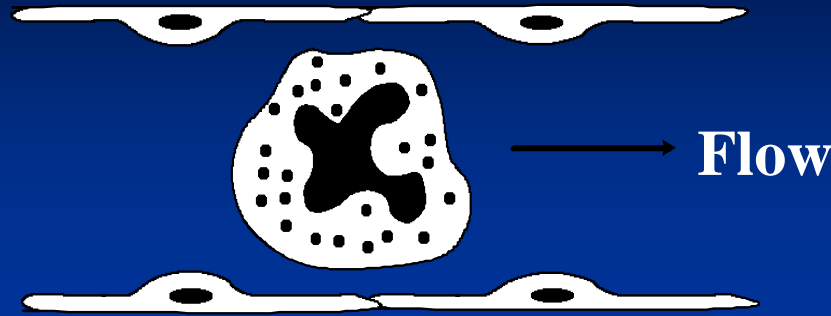
Thigh compression (thrombus in femoral vein)



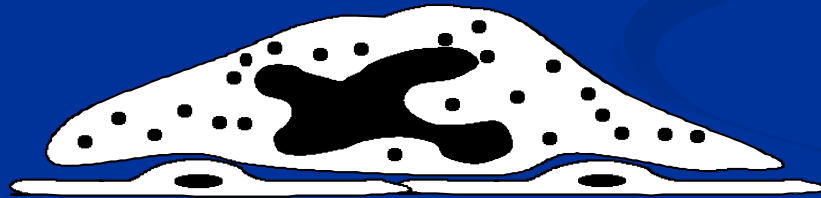
60 mm Hg



How does compression work?



Compression → **Adhesion**



Prevention of adhesion of neutrophils and monocytes

- DVT is not just a clot occluding a vein
- Inflammatory process in the vein wall and in the adventitia

Henke PK, Wakefield T.

Thromb Res. 2009;123 Suppl 4:S72-8

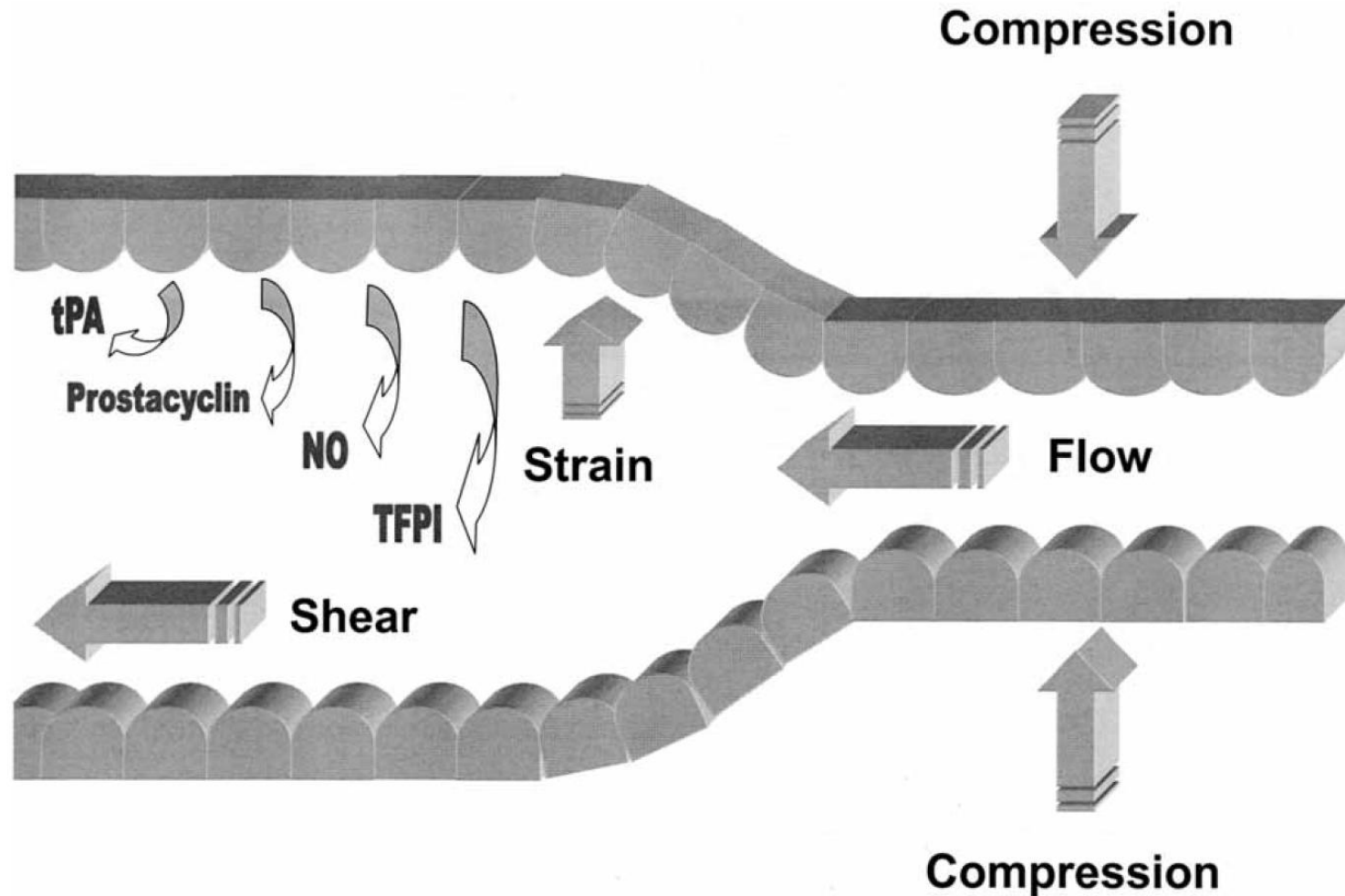


Fig. 1. Mechanical effects of pneumatic compression on a vein or artery. The pneumatic compression increases intravascular flow, shear and compressive strain on endothelial cells with the resulting release of biochemical mediators. tPA: tissue plasminogen activator; NO: nitric oxide; TFPI: tissue factor pathway inhibitor.

Stocking or bandage?

Short stretch bandage

- Pressure >60 mmHg
- Thigh -swelling
- Well tolerated during night
- But:
- Training needed

Compression stocking

- Lower pressure
- Effective against oedema
- Unpleasant during night
- Can be handled also by non-experts

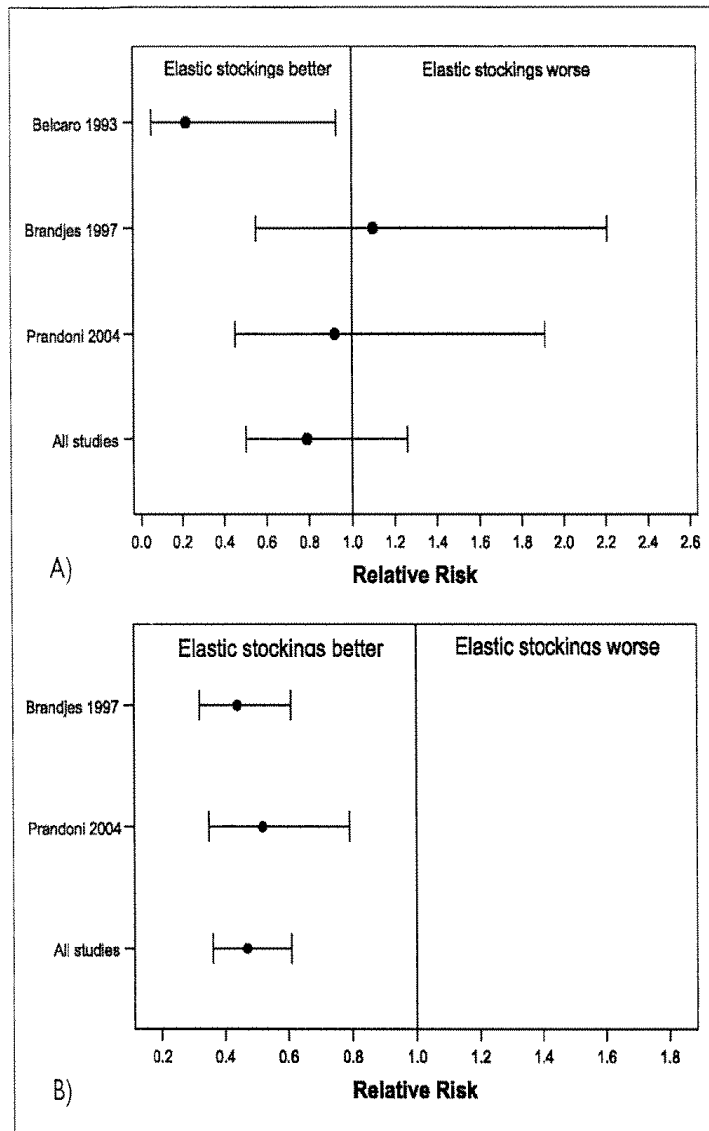
Review on the value of graduated elastic compression stockings after deep vein thrombosis

Kakkos S et al

Thromb Haemost 2006;96:441

Recurrence of DVT is NOT reduced

Development of PTS is reduced



Conclusions

Conservative therapy of acute DVT

- Compression in addition to exact anticoagulation
- Keep walking patients with DVT walking
- Compression stockings reduce pain and edema
- Continue stockings to prevent PTS, at least for 1-2 years

Medicine

Science

**Anti-
Coagulation**



Surgery

Experience

**Anti-
Stasis**

Don't forget Virchow