So You Thought You Knew All the Answers About Compression Therapy!

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Compression Questions

1. Are all compression bandages the same?
2. Can compression therapy be used in the patient with edema and an ABI < 0.8?
3. Can compression therapy be used in the patient with edema and cellulitis?
4. Does compression therapy improve the skin of patients with venous dermatitis?
5. Can compression therapy be used in the patient with edema and congestive heart failure?
6. Can compression therapy be used in the patient with edema and acute deep venous thrombophlebitis?
7. Do patients care which compression bandage is used?
Looking for the Evidence??
Are all compression bandages the same?
Compression Therapy

- Short stretch or inelastic
- Elastic
- Single layer
- Multiple layers
- High pressure
- Low pressure
Working vs. Resting Pressures
Role of Compression Material
Can compression therapy be used in the patient with edema and an ABI < 0.8?
Arterial Flow Pulses

Below Knee Blood Flow via Nuclear Magnetic Resonance

Control Leg

Treated Leg

Before Bandage

With Bandage

Dr. HN Mayrovitz, Univ of Miami
## Compression Therapy and Circulation

<table>
<thead>
<tr>
<th>ABI</th>
<th>Bandage</th>
<th>Sub-bandage pressure (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 0.8</td>
<td>4-layer</td>
<td>35-40</td>
</tr>
<tr>
<td>0.7</td>
<td>2-layer</td>
<td>17-25</td>
</tr>
<tr>
<td>0.6</td>
<td>2-layer</td>
<td>17-25</td>
</tr>
<tr>
<td>&lt;0.5</td>
<td>Only with medical supervision</td>
<td>---</td>
</tr>
</tbody>
</table>

Moffatt C. [www.worldwidewounds.com](http://www.worldwidewounds.com) (12/5/09)
Compression and Arterial Insufficiency

- 15 patients suffering from peripheral arterial occlusive disease with an ankle brachial pressure index (ABPI) of 0.5-0.8
  1) 5 patients with ABPI of ≥0.5 and ≤0.6
  2) 4 patients with ABPI of >0.6 and ≤0.7
  3) 6 patients with ABPI of >0.7 and ≤0.8

- All patients treated with 3M™ Coban™ 2 Layer Lite Compression System

- Bandage remained on the leg 1 to 4 days

- Study stopped after 14 days

Data on file – 3M
Results of 3M™ Coban™ 2 Layer Lite Compression System Study

• An average supine subbandage pressure of ~ 28mmHg was measured just above the medial ankle after bandage application

• No pressure-related skin damage occurred in patients with reduced arterial perfusion

• No pain related to tissue hypoxia was detected

Data on file – 3M
Results of 3M™ Coban™ 2 Layer Lite Compression System Study

- Laser doppler fluxmetry demonstrated positive effects on microcirculation including:
  - Increased overall tissue microperfusion
  - Reduced respiratory reflux in limbs with venous insufficiency
  - Maintained stable capillary perfusion
- Limb volume reduction (reduced edema) compared to baseline
- High wearing comfort

Data on file – 3M
Conclusions: 3M™ Coban™ 2 Layer Lite Compression System Study

• Compression with Coban 2 Layer Lite Compression System is safe and well tolerated by patients with reduced peripheral arterial perfusion

• Results of the laser doppler fluxmetry measurements indicate significant improvements of the dermal microcirculation under this compression therapy

Data on file – 3M
Venous Ulcer

99 year old lady with ulcer for 8 months

ABI - 0.45

Informed that BK amputation was the only therapy

Treated with light compression and bi-layered tissue engineered skin

Wound healed after 47 weeks
Can compression therapy be used in the patient with edema and cellulitis?

Edema and Compression Therapy in Cellulitis

1. Normal anti-Streptococcal properties of skin are inactivated by edema fluid

2. Compression therapy:
   - Removes protein-containing fluid from the subcutaneous tissues
   - Increases blood flow to tissues
   - Increases antibiotic concentration in tissues
Cellulitis of Leg

Healed after 10 days of antibiotics and 5 weeks of compression therapy
Does compression therapy improve the skin of patients with venous dermatitis?
Properties of Edema Fluid

1. Edema fluid inhibits mitogenic activity and DNA synthesis
2. Cytokine environment in edema fluid is more proinflammatory
3. Protease activity is higher in edema fluid
4. Growth factor levels are decreased in edema fluid
Proteases and Compression Therapy

Relative MMP Levels in Healthy and Ulcer Tissue Before and After Compression Therapy

Inflammatory Cytokines and Compression Therapy

Interleukins

TNF-alpha

IFN-gamma

Effect of Compression Therapy

1 Week of Compression

1 Week of Compression
Stasis Dermatitis

Improvement after 22 weeks of compression therapy
Can compression therapy be used in the patient with edema and congestive heart failure?
Massive Edema and CHF

Photo used with permission
Congestive Heart Failure and Compression Therapy

- No acute pulmonary edema
- Once treatment started with cardiostimulatory medications and diuretics

Can compression therapy be used in the patient with edema and acute deep venous thrombophlebitis?
Compression Therapy and Acute Deep Venous Thrombophlebitis

- Increases venous flow
- Prevents further clotting
- Occludes superficial veins that could clot
- Does not cause an increase in pulmonary embolism


Contraindication to Compression in Acute Deep Venous Thrombophlebitis

Leg so painful that compression cannot be tolerated.

Do patients care which compression bandage is used?
Fact: Patients don’t like compression bandages!

- Only 48.8% of patients wore their compression bandages.
- May be as high as 80%.
- Determinants for NOT wearing compression bandages:
  a. Age
  b. Pain
  c. Wound size
  d. Wound depth

Is this comfortable?
Slippage in cm: after 24 and 48 hours

<table>
<thead>
<tr>
<th>Slippage (cm)</th>
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<tbody>
<tr>
<td>actico</td>
</tr>
<tr>
<td>k-two</td>
</tr>
<tr>
<td>profore</td>
</tr>
<tr>
<td>profore lite</td>
</tr>
<tr>
<td>proguide</td>
</tr>
<tr>
<td>short stretch</td>
</tr>
<tr>
<td>long stretch</td>
</tr>
<tr>
<td>rosidal sys</td>
</tr>
<tr>
<td>coban 2 layer</td>
</tr>
<tr>
<td>coban 2 lite</td>
</tr>
</tbody>
</table>

After 48 hours of wear:

- actico: 5 cm
- k-two: 3 cm
- profore: 4 cm
- profore lite: 6 cm
- proguide: 3 cm
- short stretch: 2 cm
- long stretch: 8 cm
- rosidal sys: 1 cm
- coban 2 layer: 4 cm
- coban 2 lite: 5 cm
Patient Preference for Compression Therapy

- 72% of patients preferred Coban 2 Layer Compression System over Profore when treated with both for venous ulcer
- Coban 2 Layer Compression System showed less slippage than Profore
- Quality of Life assessments were better with Coban 2 Layer Compression System than with Profore (p<0.05)

Compression Questions

1. Are all compression bandages the same?  **NO**
2. Can compression therapy be used in the patient with edema and an ABI < 0.8?  **YES**
3. Can compression therapy be used in the patient with edema and cellulitis?  **YES**
4. Does compression therapy improve the skin of patients with venous dermatitis?  **YES**
5. Can compression therapy be used in the patient with edema and congestive heart failure?  **YES**
6. Can compression therapy be used in the patient with edema and acute deep venous thrombophlebitis?  **YES**
7. Do patients care which compression bandage is used?  **YES**
“It is the individual patient who we treat, not the disease. It is the patient who recovers or dies, not the illness.”
Sponsored by an educational grant from 3M

For more information on 3M Compression Therapy visit www.3m.com/coban2layer

or contact us 1-800-228-3957