Velcro band devices or conventional bandaging? Pro and contra

Robert Damstra MD PhD
Dutch Expert Center for Lymphovascular Medicine
Nij Smellinghe Hospital, Drachten (NL)
Overview of materials

Used in initial / maintenance phase

Elastic properties (PLaCE rule)

Stiffness of materials
Modern compression technology: how to choose?

- Bandages
- Garments
- Mechanical compression (Intermittent pneumatic compression)
- Pads / padding material
- Point pressure device (PPD)
- Adjustable compression device (ACD – Velcro)
Influence compression on microcirculation (MC)

**Lymphatic part of MC**
- Lymph capillary pressure
- Absorption rate
- Rhythmic propulsions

**Venous part of MC**
- Venous pressure
- Filtration rate
- Valvular function

Interstitial volume
Valcro device (juxta fit®) original for maintenance phase used in the treatment phase (Adjustable compression Device /ACD)
leg volumes in lymphedema patients (n=36)

**Juxta / Volume reduction after 2 and 24 h**
- T0 - T24: volume reduction
  - T0 - T24: (P<0.05)
  - 2CC: -7.0% (median 290cc)
  - JF: -10.0% (median 429cc)
Patient is able to learn applying adequate pressure after one demonstration (self-management)

Total number of adjustments between 2-24 hours: (n=26)

Looser : 12 x
Tighter: 14 x

Cost efficacy of using Juxta CURES™ and UCS™ debridement cloths

Effective in wound healing and ulcer treatment

Sue Elvin
# Study Valcro device in Knee displacement

<table>
<thead>
<tr>
<th>Usual Care</th>
<th>Pilot study</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Immediately after OK - 24u post OP</td>
<td>• Compression fitting preoperatively</td>
</tr>
<tr>
<td>• Bandages Elastomull Haft®</td>
<td>• Immediately after OP untill 6 weeks post OP</td>
</tr>
<tr>
<td>• 24h untill 6 weeks post OP</td>
<td>• Struva anti-trombosis stocking (class 2)</td>
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<tr>
<td>• Anti-thrombosis stockings</td>
<td>• Juxta Reduction Kit</td>
</tr>
<tr>
<td>• CPM</td>
<td>• CPM</td>
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<tr>
<td>• Rapid Recovery / fast track</td>
<td>• Rapid Recovery / fast track</td>
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</tbody>
</table>

Pilot study in 20 patients / 4 controls  
VAS / circumference measurements
Preliminary results / circumference leg control

Control group

10 cm increase
Preliminary results: Valcro-wrap treatment
„Optimal“ initial pressure of inelastic material immediately after application

- ARM: ~30 mmHg
- LEG: 40-60 mmHg

Dose - response relationship

DOSE \[\rightarrow\] RESPONSE

Interface pressure \[\rightarrow\] Volume reduction

Twice per week

Pressure

"OPTIMAL PRESSURE"

Time

counterproductive

very effective

less effective
How effective are we?

(How) Do we measure?

How do we evaluate the results?

What are results: volume reduction? Pain? Wound healing?
How well is compression applied?

- “I am trained!”
- “I have a lot of experience!”
- “I know exactly what I am doing!”
- “Patients are very satisfied!!”
- The numbers tell the tale!
Compression by 68 nurses / 3 types: 30-50 mmHg

Table 2. Subbandage Pressures Obtained by the 3 Compression Bandages

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Inelastic Bandage (n = 68)</th>
<th>Elastic Bandage (n = 68)</th>
<th>Two-Component Bandage (n = 62)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandage pressure, mean (range), mm Hg</td>
<td>30.4 (11-57)</td>
<td>31.8 (18-78)</td>
<td>41.9 (19-80)</td>
</tr>
<tr>
<td>Exerted subbandage pressure, mm Hg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-19</td>
<td>10 (15)</td>
<td>5 (7)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>20-29</td>
<td>28 (41)</td>
<td>31 (46)</td>
<td>10 (16)</td>
</tr>
<tr>
<td>30-50</td>
<td>27 (40)</td>
<td>28 (41)</td>
<td>39 (63)</td>
</tr>
<tr>
<td>&gt;50</td>
<td>3 (4)</td>
<td>4 (6)</td>
<td>12 (19)</td>
</tr>
<tr>
<td>Achieved the desired subbandage pressure range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14 (21)</td>
<td>17 (25)</td>
<td>17 (27)</td>
</tr>
<tr>
<td>No</td>
<td>54 (79)</td>
<td>51 (75)</td>
<td>45 (73)</td>
</tr>
</tbody>
</table>

Is a bandage always effectively applied?

N=551 trained professionals
Picopress at B1
Optimal: 50-60 mmHg
Short stretch bandaging

Figure 1: Pressure at rest upon bandaging with short stretch bandages in accord with Sigg (n = 551).

Reasons to use valcro wraps: good bandaging is hard

selfmanagement tools in both initial and maintenance phase

More easy to apply by less skilled professionals and by trained patients

Very disfigured sizes

BUT:

4. Necessity for training the therapist to educate the patient and or professional
New model with positive health

Ten Napel et al. 2006; WUR/LBI

Control model

- Focus on problem
- Continuous monitoring
- Direct stimulation
- Static equilibrium

Adaptive model

- Focus on system
  - Stimulate self-regulation
- Indirect stimulation
- Dynamic equilibrium

= patient
Multinational, pilot audit of a Velcro adjustable compression wrap system for venous and lymphatic conditions.

Ehmann S¹, Whitaker JC², Hampton S³, Collarte A⁴.

N= 17 (venous legs ulcer, lymphedema, venous edema

4 weeks period:
- improvement open wounds (?)
- 100% circumference reduction

- 94% by patient (59%) or carer (35%)
- just 6% by healthcare professional

Conclusion:
The device can potential reduce costs and healthcare burden
<table>
<thead>
<tr>
<th><strong>PRO</strong></th>
<th><strong>CONS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Selfmanagement</td>
<td>More expensive (especially in the initial phase)</td>
</tr>
<tr>
<td>More easy to apply</td>
<td>More bulky</td>
</tr>
<tr>
<td>Adjustable</td>
<td>Window edema / strangulation</td>
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<tr>
<td>Proven effective</td>
<td>Concordant patient</td>
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<tr>
<td>Modern, hands-off therapist (new concept of healthcare)</td>
<td>Paradigm shift needed</td>
</tr>
</tbody>
</table>
Conclusion

- ACD (Velcro) is effective for edema reduction and circumference maintenance
- **Efficiency** when more selfmanagement by patient or carer and less by HCP. Or: more easy for HCP
- ACD fits perfectly in new concepts of chronic care
- In complex indications effective (eg lumps, morbid obesity) when bandaging not possible
- For re-use in operation patients?