Impact of class I compression stockings on cross-sectional area of calf deep veins and great saphenous vein in healthy subjects and varicose veins patients

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... small differences are seen, the antero-posterior and medio-lateral diameter of the medial gastrocnemius muscle veins decrease under compression – stocking class II in healthy volunteers...

(upright, tested by DUS)

Background

... In the standing position compression stockings with a pressure of 22 mmHg were able to reduce the calibre of deep calf veins, but not of superficial varices...

(upright, tested by MRI)

After 2 weeks of compression mean diameters of gastrocnemius veins and short saphenous veins decreased significantly in the standing position. No significant change was seen in the posterior tibial veins.

(upright, tested by DUS)

Aim

01 To find out the changes of cross-sectional area of deep and superficial veins in healthy subjects after applying compression class I stockings (15-20 mmHg)

02 To find out the changes of cross-sectional area of deep and superficial veins in varicose veins patients after applying compression class I stockings (15-20 mmHg)
Design

DUS performed before and after applying of stockings in both supine and upright positions

Measurement of cross-sectional area of one of posterior tibial veins and a great saphenous vein at the same level
### Study group

<table>
<thead>
<tr>
<th>Healthy</th>
<th>Varicose veins</th>
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</thead>
<tbody>
<tr>
<td>22 (25 legs)</td>
<td>15 (15 legs)</td>
</tr>
<tr>
<td>Female 12 (48%)</td>
<td>Female 14 (93%)</td>
</tr>
<tr>
<td>Age 31±8,8</td>
<td>Age 41±9,9</td>
</tr>
</tbody>
</table>
Method
Measurements of cross-sectional area

Supine

No compression

Compression
Measurements of cross-sectional area

No compression

Compression

Upright
Results: healthy subjects, GSV

No compression

Supine

0.09 cm²
- 26%, p=0.065

Compression

0.07 cm²

Upright

0.11 cm²
- 19%, p=0.386
Results: healthy subjects, PTV

No compression

Supine
- 30%, p=0.002

Compression

Upright
- 16%, p=0.069
Results: varicose veins, GSV

No compression

Supine

0.075 cm²
- 22%, p = 0.117

Compression

0.06 cm²

Upright

0.087 cm²
+ 5%, p = 0.651

0.091 cm²
Results: varicose veins, PTV

No compression

0.14 cm²

Supine

- 33%, p=0.0698

0.09 cm²

Compression

Upright

0.115 cm²

Upright

0.115 cm²
Results: action of 15-20 mmHg compression

<table>
<thead>
<tr>
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<th>Healthy</th>
<th></th>
<th>Varicose veins</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Superficial</td>
<td>Deep</td>
<td>Superficial</td>
<td>Deep</td>
</tr>
<tr>
<td>Supine</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Upright</td>
<td>NS</td>
<td>NS</td>
<td>X</td>
<td>X</td>
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</tbody>
</table>
Conclusion

Compression class I stockings:

- do not narrow superficial and deep veins in patients with varicose veins in upright position

- have significant impact on only deep veins in only supine position in healthy subjects