The endovascular ablation of incompetent perforator veins using EVLT and RFA

Tobias Hirsch, Practice for Vascular Diseases Halle, Germany
www.gefaessmedizin-hirsch.de
Disclosure

Tobias HIRSCH

I have the following potential conflicts of interest to report:

- Consulting: Medtronic
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
Endovenous ablation (radiofrequency and laser) and foam sclerotherapy versus open surgery for great saphenous vein varices (Review)

Nesbitt C, Bedenis R, Bhattacharya V, Stansby G
“Implications for practice
Current data suggest that foam sclerotherapy and endovenous ablation (laser and radio-frequency) have similar outcomes as open surgery involving high ligation and stripping (HL/S)…”

USA: American Venous Forum 2011
UK: NICE Guidelines 2013
But what about?
>150 PV per leg
>150 PV per leg

**GSV**
- Perforators of the femoral canal
- Paratibial perforators
- Posterior tibial perforators (Cockett)

**SSV**
- Profunda perforator (Hach)
- Popliteal fossa perforator
- Medial gastrocnemius perforator
- Lateral leg perforator
GSV

Perforators of the femoral canal

Paratibial perforators

Posterior tibial perforators (Cockett)

SSV

Profunda perforator (Hach)

Popliteal fossa perforator

Medial gastrocnemius perforator

Lateral leg perforator

>150 PV per leg
**Guideline 13. Treatment of perforating veins**

<table>
<thead>
<tr>
<th>Guideline No.</th>
<th>13. Treatment of perforating veins</th>
<th>GRADE of recommendation</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.1</td>
<td>We recommend against selective treatment of incompetent perforating veins in patients with simple varicose veins (CEAP class C&lt;sub&gt;2&lt;/sub&gt;).</td>
<td>1</td>
<td>B</td>
</tr>
<tr>
<td>13.2</td>
<td>We suggest treatment of “pathologic” perforating veins that includes those with outward flow of ≥500-ms duration, with a diameter of ≥3.5 mm, located beneath healed or open venous ulcer (class C&lt;sub&gt;5&lt;/sub&gt;-C&lt;sub&gt;6&lt;/sub&gt;).</td>
<td>2</td>
<td>B</td>
</tr>
<tr>
<td>13.3</td>
<td>For treatment of “pathologic” perforating veins, we suggest subfascial endoscopic perforating vein surgery, ultrasonographically guided sclerotherapy, or thermal ablations.</td>
<td>2</td>
<td>C</td>
</tr>
</tbody>
</table>
PV treatment: devices for PAPS

RFA
ClosureRFS-Stylet (Medtronic™)
85°C, 2 x 4min

EVLIT
radial laser ELVeS slim (Biolitec®)
1,470nm, 8W, 70J
Radiofrequency ablation
Female, 76
C6
2009 Stripping GSV
2014 ClariVein SSV

Cockett-III-perforator

RFA Stylet
Medtronic® RFAS
post intervention
The role of perforators in chronic venous insufficiency

Phlebology 2010;25:3–10

T F O’Donnell
Venous Center, Tufts Medical Center, Director of the Venous Centers at Tufts Medical Center and Dedham Medical Associates

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Characteristics of the five published series for percutaneous thermal ablation of perforators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor</td>
<td>Proebstle</td>
</tr>
<tr>
<td>Patients/ICPVs (#)</td>
<td>60/67</td>
</tr>
<tr>
<td>ICPV (Diam., mm)</td>
<td>3.3</td>
</tr>
<tr>
<td>Other Rx</td>
<td>50% GSV</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Follow-up (mos.)</td>
</tr>
<tr>
<td></td>
<td>Occluded (%)</td>
</tr>
<tr>
<td></td>
<td>Complications</td>
</tr>
</tbody>
</table>
Laser ablation
Male, 72
C3, phlebitis
bilateral insuff. GSV
profunda perforator
radial laser
ELVeS Biolitec® slim
# Endovenous laser ablation of insufficient perforating veins: Energy is key to success

**Doeke Boersma, Daan LJ Smulders, Olaf J Bakker, Ronald FF van den Haak, Bart AN Verhoeven and Olivier HJ Koning**

## Table 2. Overview on reported series of endovenous laser ablation in insufficient perforating veins.

<table>
<thead>
<tr>
<th></th>
<th>Wavelength</th>
<th>IPV (n)</th>
<th>Energy delivery</th>
<th>Watts</th>
<th>Follow-up</th>
<th>Anatomical success (%)</th>
<th>Major complications</th>
</tr>
</thead>
</table>
| Proebstle and Herdemann $^8$ | 940 nm     | 12$^a$  | Pulsed          | 5–30  | 1 day           | 100                    | Paresthesia: 16%  
                          1320 nm     | 28$^a$    | Pulsed          | 5–10  | 1 day           | 100                    | DVT: 0%             |
| Hissink et al.$^9$   | 810 nm     | 58$^b$  | Continuous      | 14    | 3 months        | 78                     | Paresthesia: 3.6%  
                          | 808 nm     | 534$^c$ | Continuous      | 6–10  | 3 months–6 years | 72.2                   | DVT: 0%             |
| Corcos et al.$^{10}$ | 980 nm     | 26$^d$  | Continuous      | 10    | 1 week–12 months| 96.1 100               | Paresthesia: 3.3%  
                          | 1470 nm    | 24      | Continuous      | 10    | 1 year          | 86.9                   | DVT: 0%             |
| Park et al.$^{11}$  | 1470 nm    | 24      | Continuous      | 10    | 1 year          | 86.9                   | Paresthesia: 4%    
                          | 810 nm     | 94      | Continuous      | 14    | 6 weeks         | 62.8                   | DVT: 0%             |
| Dumantepe et al.$^{12}$ | 1470 nm | 69$^e$  | Continuous      | 8     | 1 week 1 month  | 94.2 95.6              | Paresthesia: 1.8%  
                          | 1470 nm    | 77      | Continuous      | 6     | 6 weeks         | 45.5                   | DVT: 0%             |

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$^a$=_dm; $^b$=_P; $^c$=_gon; $^d$=_P; $^e$=_gon; $^f$=_P; $^g$=_gon; $^h$=_gon; $^i$=_gon; $^j$=_gon; $^k$=_gon; $^l$=_gon; $^m$=_gon; $^n$=_gon; $^o$=_gon; $^p$=_gon; $^q$=_gon; $^r$=_gon; $^s$=_gon; $^t$=_gon; $^u$=_gon; $^v$=_gon; $^w$=_gon; $^x$=_gon; $^y$=_gon; $^z$=_gon;
Factors that influence perforator vein closure rates using radiofrequency ablation, laser ablation, or foam sclerotherapy

Eric S. Hager, MD, Christopher Washington, MD, Amy Steinmetz, RDMS, RVT, Timothy Wu, MD, Michael Singh, MD, and Ellen Dillavou, MD, Pittsburgh, Pa
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<th>RFA</th>
<th>EVLT</th>
<th>UGFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=296</td>
<td>93 (31%)</td>
<td>62 (21%)</td>
<td>141 (48%)</td>
</tr>
<tr>
<td>Closure rate 2 weeks</td>
<td>73%</td>
<td>61%</td>
<td>57%</td>
</tr>
</tbody>
</table>

**No influence:** PV size, deep vein reflux, OAC

**Influence:** BMI > 50 (closure rate 37%)
2016
“Regardless of method used successful closure of perforators appears predictive of wound healing with minimal morbidity”
Conclusion

Thermal ablation of refluxing perforating veins is a good alternative to endoscopic surgery (C5, C6)

Try and collect data!
Thank you for your attention!
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