Is steam still a solution for endovenous ablation?

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• Disclosure

Speaker name: Michael Jünger

I do not have any potential conflict of interest
The endovenous SVS procedure is similar to the well known RFA and ELVA techniques

- No guidewire, flexible catheter, d=1.2mm, 16 G
- Energy release results from compressed steam on the catheter tip
- The steam disperses in the vein over a distance of at least 2 cm
- As the steam is ejected approximately 60 Joule per pulse measured and temperatures are reported to be 120° C
Steam vein sclerosis

The compressed steam is produced of sterilised water by a generator and passed through a heated element by piston pressure and ejected on two small holes faced on the flexible catheter tip.
Aim:

This study examined the SVS approach for the treatment of varicose veins in concern of safety, occlusion rates and postprocedural side effect profile
Methods:

Inclusion of 102 patients

Age 21-85y, mean 58.2y

Treated veins:
GSV n = 74
SSV n = 35

Unilateral treatment

No additional treatments like phlebectomy or sclerotherapy were performed until day 42 after treatment

• CAEP
  • C2 – 7
  • C3 – 54
  • C4 – 31
  • C5 – 5
  • C6 - 12
Treatment

- treatment started 2 - 3cm below SFJ with 3 pulses.
- ejection of pulses according to venous diameter
  <10 mm – 2 pulses
  ≥ 10 mm – 3 pulses
- mobilisation immediately after treatment.
- short stretch compression bandage for 15-24 hours.
- Compression therapy by graded compression stockings for the following weeks
Results:

Follow up day 1 y:
GSV (V.s.magna)
N=71  GSV
Occlusion of target vein : n= 63  (89%)
Partial occlusion: n=5  (7%)
Recanalisation, Venous Flow: n=3  (4%)

SSV (V.s.parva)
N=30
Occlusion of target vein : n= 25  (83%)
Partial occlusion: n=3  (10%)
Recanalisation, Venous Flow: n=3  (7%)
DPPG GSV

GSV

initial V0

V0 after treatment

one-sided p=0.00012

GSV

initial T0

T0 after treatment

one-sided p=0.0000001
Diameter GSV III

Diameter of GSV 3cm distal to SFJ

before treatment vs. 1 year follow up 1-sided p=0.000000000
Diameter GSV IV

Diameter of GSV 30cm distal to SFJ

before treatment vs. 1 year follow up 1-sided p=0.000000000

mm

before treatment  1 day follow up  6 week follow up  1 year follow up
Results:

Side effect profile:

No major complications  
(DVT, skin burns, wound infections, paraesthesia)

<table>
<thead>
<tr>
<th>Minor complications</th>
<th>Day 1</th>
<th>Day 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haematoma:</td>
<td>n=40 (39%)</td>
<td>n=0</td>
</tr>
<tr>
<td>Ecchymosis:</td>
<td>n=1 (1%)</td>
<td>n=0</td>
</tr>
<tr>
<td>Reddening:</td>
<td>n=2 (2%)</td>
<td></td>
</tr>
</tbody>
</table>

GSV (n=74):  
3x phlebitis,  
2x thrombosis (2.7%, short, without residuals)

SSV (n=35):  
1x perforator thrombosed  
1x thrombosis (2.8%, short, without residuals)
FRAGEBOGEN

Frage: Hatten Sie Schmerzen, Wärme- oder Druckgefühl während der Behandlung?

- Ja: 19
- Nein: 28

• Beschwerdestärke nach Skala von 0 bis 10:
  - Bei 12 Patienten von 1 bis 3
  - Bei 7 Patienten von 4 bis 7
**FRAGEBOGEN**

**Frage:** Waren Sie wegen der Behandlung oder Beschwerden krank geschrieben?

- **ja**: 11
- **nein**: 32
- **keine Antwort**: 4

- **Wenn ja, in welcher Zeitspanne?:**
  - 6 Patienten 1 bis 3 Tage
  - 3 Patienten 5 bis 7 Tage
  - 2 Patienten 14 Tage
FRAGEBOGEN
Frage: Würden Sie diesen Eingriff weiterempfehlen?

• Wenn nein, warum?:
  • Krampfadern weiterhin vorhanden
  • Behandlung war schmerzhaft, Patient hätte den Eingriff gern in Narkose
Summary: reasonable level of

- Clinical efficacy
- Hemodynamic effects
- Undesired events
- Patients’ satisfaction
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