The Use of Adjunctive Venography and Endovascular Manoeuvres In The Treatment of Saphenous Vein Insufficiency

A Prospective, Multi-centre Study

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Associate Professor of Vascular Surgery
University of New South Wales
Sydney, Australia
Disclosure

Speaker name:

..........Ramon L. Varcoe.......................................................

I have the following potential conflicts of interest to report:

- Consulting: Medtronic, Abbott Vascular, Boston
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

- I do not have any potential conflict of interest
Ultrasound for Saphenous Vein Rx

• High quality
• Real-time imaging
• Without radiation

• Guide venous access
• Visualise ablation catheter
• Tumescence
Limitations of Ultrasound

- Anatomical complexities
- Venous strictures
- Duplicate saphenous systems
- Severe tortuosity
- Segmental occlusions
- Aneurysms
- Venous confluence deep within the leg
Study Design

Prospective, Multi-Centre design

Inclusion Criteria
- >18 yo
- CEAP 2-6
- Great-, small-, inter-saphenous or perforator ablation (RFA or CAE)
- Sonographic reflux >0.5 sec

Exclusion Criteria
- Pregnant patients
- Contrast allergy
- Renal impairment
- Those undergoing:
  - Surgical ligation/stripping
  - Simple phlebectomy
  - Pelvic embolization
  - Rx for May-Thurner syndrome

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<th>305</th>
<th>Venous trunks</th>
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<tbody>
<tr>
<td>268</td>
<td>Limbs</td>
</tr>
<tr>
<td>200</td>
<td>Patients</td>
</tr>
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October 2010 to May 2016

From: Varcoe et al. 2017 JEVT (in press, online)
## Patient Demographics

<table>
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<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Age (mean ± SD, range)</td>
<td>60.9 ± 12.9 (33-86)</td>
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<td>Women</td>
<td>128 (64%)</td>
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<td>Number of legs treated</td>
<td>268</td>
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<td>Number of saphenous trunks</td>
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## Treatment Indication

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## CEAP Classification

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<th>Class</th>
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<td>Skin changes</td>
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<td>Active ulcer</td>
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<th>Insufficient Vein</th>
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<tr>
<td>Great saphenous</td>
<td>241 (79%)</td>
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<td>Small Saphenous</td>
<td>38 (13%)</td>
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<tr>
<td>Anterior accessory great saphenous</td>
<td>6 (2%)</td>
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<tr>
<td>Inter-saphenous (Giacomini)</td>
<td>10 (3%)</td>
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<td>Perforator</td>
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From: Varcoe et al. 2017 JEV (in press, online)
Venography

- 542 runs
  - Mean 2.0/limb
  - Median 1.0/limb

- Mean Time: 4.9 ±9.1 min (range 1-48)

- Nil contrast related morbidity*

*CIN, Anaphylaxis, Anaphylactoid reactions

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Venous Anomalies in 66%
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Duplicate System

33%

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Aneurysm

33%  28%

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Venous Anomalies in 66%

- Duplicate System: 33%
- Aneurysm: 28%
- Stenosis: 21%

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Venous Anomalies in 66%

- **Duplicate System**: 33%
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- **Stenosis**: 21%
- **Large Incompetent Perforator**: 11%
- **Saphenous Occlusion**: 4%

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Venous Anomalies in 66%

- Duplicate System: 33%
- Aneurysm: 28%
- Stenosis: 21%
- Large Incompetent Perforator: 11%
- Saphenous Occlusion: 4%
- Filling Defect (Thrombus): 3%

From: Varcoe et al. 2017 JEV (in press, online)
OK, Anomalies are Interesting
BUT...
Did They Change Your Management?
Adjunctive Manoeuvres in 44%

From: Varcoe et al. 2017 JEVT (in press, online)
Adjunctive Manoeuvres in 44%

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Use of a low profile guide wire and angled catheter

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From: Varcoe et al. 2017 JEV (in press, online)
Use of additional RFA or CAE in dilated segment 15%

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<td>4 (2%)</td>
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<td>Selective cannulation of an incompetent saphenous vein</td>
<td>24 (12%)</td>
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Selective Cannulation in 12%

Treated multiple Trunks in 2%

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<td>Fluoroscopic guidance to negotiate the superficial-deep-vein junction</td>
<td>6 (3%)</td>
</tr>
<tr>
<td>Fluoroscopic guidance to position the radiofrequency probe</td>
<td>27 (14%)</td>
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From: Varcoe et al. 2017 JEV (in press, online)
Fluoroscopic guided probe positioning in 14%.

From: Varcoe et al. 2017 JEVT (in press, online)
How Often did X-ray Guidance Facilitate Complete Saphenous Ablation?
Self Reported Rate of 34/200 (17%)

“UNABLE TO COMPLETE Rx WITHOUT XRAY”

…Where the operator felt that the procedure would have to be left incomplete or converted to foam without an endovascular manoeuvre….

From: Varcoe etal. 2017 JEVT (in press, online)
Self Reported Rate of 34/200 (17%)

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<th>Required Manoeuvre</th>
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<td>Selective cannulation of an incompetent saphenous trunk required</td>
<td>14 (41%)</td>
</tr>
<tr>
<td>Severe Tortuosity</td>
<td>13 (38%)</td>
</tr>
<tr>
<td>Stenosis Preventing Passage of Probe/Catheter</td>
<td>9 (27%)</td>
</tr>
<tr>
<td>Occluded Saphenous Vein (with an incompetent proximal segment)</td>
<td>5 (15%)</td>
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Based on mean 2.0 runs/limb
0.74 mSv/limb
Risk 1 in 36,000 fatal cancer

Source: Australian Radiation Protection and Nuclear Safety Agency
Based on mean 2.0 runs/limb
- 0.74 mSv/limb
- Risk 1 in 36,000 fatal cancer

Compared with...
- 1.5 mSv - a year’s environmental exposure
- 1-5 mSv – CT Brain
- 5-10 mSv – Coronary angiography
- >10 mSv – CT Abdo/Pelvis (multi-phase)
Based on mean 2.0 runs/limb
- 0.74 mSv/limb
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Source: Australian Radiation Protection and Nuclear Safety Agency
Summary

• A significant number of venous anomalies go unrecognised by standard duplex imaging
• A number of those (44%) benefit from “x-ray guided endovascular assistance”
• Without that assistance 1 in 5 will be left with incomplete treatment or converted to foam
• There is definite value in using x-ray guidance in selected patients
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