Management Strategies for patients with varicose veins (C2-C6)

Professor Alun H Davies
Section of Vascular Surgery
Charing Cross & St Mary’s Hospitals
London
Phlebology
Epidemiology of chronic venous disorders in geographically diverse populations: results from the Vein Consult Program

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4Sorocaban SP, Sao Paulo, Brazil
5Hospital Universitario San Cecilio, Granada, Spain
6National coordinators of the Vein Consult Program (VCP)*

<table>
<thead>
<tr>
<th>Western Europe</th>
<th>Central and Eastern Europe</th>
<th>Latin America</th>
<th>Middle East</th>
<th>Far East</th>
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</thead>
<tbody>
<tr>
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<tr>
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<td></td>
<td>Serbia Slovak republic</td>
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<tr>
<td></td>
<td>Slovenia Ukraine</td>
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<td>Vietnam</td>
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</tbody>
</table>
Epidemiology of chronic venous disorders in geographically

Figure 1.—Distribution of the CEAP clinical classes according to geographical areas.
Epidemiology of chronic venous disorders in geographically (CVDs) 

<table>
<thead>
<tr>
<th>Table V. — GPs’ behavior towards CVD patients and referral of patients to specialists by geographical area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>% subjects considered as CVD patients by GPs</td>
</tr>
<tr>
<td>CEAP</td>
</tr>
<tr>
<td>C0s</td>
</tr>
<tr>
<td>C1</td>
</tr>
<tr>
<td>C2</td>
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<tr>
<td>C3</td>
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<tr>
<td>C4</td>
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<tr>
<td>C5</td>
</tr>
<tr>
<td>C6</td>
</tr>
</tbody>
</table>

% patients eligible to specialist referral

| CEAP | N. | Statistics | | | | |
| C0s | 15290 | 634 (4.1%) | 5.0% | 4.7% | 3.1% | 2.3% | 0.2% |
| C1 | 16901 | 2648 (15.7%) | 9.0% | 29.9% | 10.3% | 16.2% | 1.3% |
| C2 | 13888 | 5097 (36.7%) | 20.5% | 54.7% | 35.9% | 53.0% | 5.8% |
| C3 | 11392 | 4950 (43.5%) | 24.2% | 63.8% | 39.0% | 34.3% | 7.2% |
| C4 | 5814 | 2971 (51.1%) | 34.3% | 65.5% | 53.5% | 47.9% | 8.1% |
| C5 | 1122 | 618 (55.1%) | 48.0% | 58.7% | 55.5% | 67.6% | 5.9% |
| C6 | 535 | 322 (60.2%) | 62.4% | 55.4 | 72.4% | 73.7% | 35.8% |
### Table V. — GPs’ behavior towards CVD patients and referral of patients to specialists by geographical area.

<table>
<thead>
<tr>
<th>% subjects considered as CVD patients by GPs</th>
<th>All subjects (N=62378)</th>
<th>Western Europe (N=23662)</th>
<th>Central and Eastern Europe (N=22770)</th>
<th>Latin America (N=9285)</th>
<th>Middle East (N=1773)</th>
<th>Far East (N=4888)</th>
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</thead>
<tbody>
<tr>
<td>CEAP</td>
<td>N.</td>
<td>Statistics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C0s</td>
<td>15290</td>
<td>3902 (25.5%)</td>
<td>37.8%</td>
<td>15.3%</td>
<td>13.9%</td>
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<td>C1</td>
<td>16901</td>
<td>12619 (74.7%)</td>
<td>71.5%</td>
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<tr>
<td>C2</td>
<td>13888</td>
<td>12394 (89.2%)</td>
<td>85.8%</td>
<td>91.8%</td>
<td>94.5%</td>
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<tr>
<td>C3</td>
<td>11392</td>
<td>10385 (91.2%)</td>
<td>90.4%</td>
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<td>98.0%</td>
<td>69.4%</td>
</tr>
<tr>
<td>C4</td>
<td>5814</td>
<td>5330 (91.7%)</td>
<td>93.5%</td>
<td>94.8%</td>
<td>99.4%</td>
<td>82.2%</td>
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<tr>
<td>C5</td>
<td>1122</td>
<td>1078 (96.1%)</td>
<td>96.4%</td>
<td>96.8%</td>
<td>97.2%</td>
<td>85.3%</td>
</tr>
<tr>
<td>C6</td>
<td>535</td>
<td>502 (93.8%)</td>
<td>95.3%</td>
<td>95.0%</td>
<td>100.0%</td>
<td>89.5%</td>
</tr>
</tbody>
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<td>C0s</td>
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<tr>
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<td>618 (55.4%)</td>
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<tr>
<td>C6</td>
<td>535</td>
<td>322 (60.2%)</td>
<td>62.4%</td>
</tr>
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The care of patients with varicose veins and associated chronic venous diseases: Clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum

Peter Gloviczki, MD,a Anthony J. Comerota, MD,b Michael C. Dalsing, MD,c Bo G. Eklof, MD,d David L. Gillespie, MD,e Monika L. Gloviczki, MD, PhD,f Joann M. Lohr, MD,8 Robert B. McLafferty, MD,h Mark H. Meissner, MD,i M. Hassan Murad, MD, MPH,j Frank T. Padberg, MD,k Peter J. Pappas, MD,k Marc A. Passman, MD,l Joseph D. Raffetto, MD,m Michael A. Vasquez, MD, RVT,n and Thomas W. Wakefield, MD,o Rochester, Minn; Toledo, Ohio; Indianapolis, Ind; Helsingborg, Sweden; Rochester, NY; Cincinnati, Ohio; Springfield, Ill; Seattle, Wash; Newark, NJ; Birmingham, Ala; West Roxbury, Mass; North Tonawanda, NY; and Ann Arbor, Mich
The care of patients with varicose veins and associated chronic venous diseases: Clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum

Peter Gloviczki, MD, a Anthony J. Comerota, MD, b Michael C. Dalsing, MD, c Bo G. Eklof, MD, d

Guideline 9. Compression treatment

<table>
<thead>
<tr>
<th>Guideline No.</th>
<th>9. Compression treatment</th>
<th>GRADE of recommendation</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>We suggest compression therapy using moderate pressure (20 to 30 mm Hg) for patients with symptomatic varicose veins.</td>
<td>2</td>
<td>C</td>
</tr>
<tr>
<td>9.2</td>
<td>We recommend against compression therapy as the primary treatment of symptomatic varicose veins in patients who are candidates for saphenous vein ablation.</td>
<td>1</td>
<td>B</td>
</tr>
<tr>
<td>9.3</td>
<td>We recommend compression as the primary therapeutic modality for healing venous ulcers.</td>
<td>1</td>
<td>B</td>
</tr>
<tr>
<td>9.4</td>
<td>We recommend compression as an adjuvant treatment to superficial vein ablation for the prevention of ulcer recurrence.</td>
<td>1</td>
<td>A</td>
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The care of patients with varicose veins and associated chronic venous diseases: Clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum

**Guideline 11. Endovenous thermal ablation**

<table>
<thead>
<tr>
<th>Guideline No.</th>
<th>11. Endovenous thermal ablation</th>
<th>GRADE of recommendation</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1</td>
<td>Endovenous thermal ablations (laser and radiofrequency ablations) are safe and effective, and we recommend them for treatment of saphenous incompetence.</td>
<td>1</td>
<td>B</td>
</tr>
<tr>
<td>11.2</td>
<td>Because of reduced convalescence and less pain and morbidity, we recommend endovenous thermal ablation of the incompetent saphenous vein over open surgery.</td>
<td>1</td>
<td>B</td>
</tr>
</tbody>
</table>

9.3 We recommend compression as the primary therapeutic modality for healing venous ulcers. 1 B

9.4 We recommend compression as an adjuvant treatment to superficial vein ablation for the prevention of ulcer recurrence. 1 A
Varicose veins in the legs

The diagnosis and management of varicose veins

Clinical guideline

Methods, evidence and recommendations

July 2013
Varicose veins in the legs

The diagnosis and management of varicose veins

Cost about £500,000 to do

Clinical guideline

Methods, evidence and recommendations

July 2013
Key Recommendation

Referral to a vascular service

3. Refer people with bleeding varicose veins to a vascular service immediately.

4. Refer people to a vascular service if they have any of the following.
   - Symptomatic primary or symptomatic recurrent varicose veins.
   - Lower-limb skin changes, such as pigmentation or eczema, thought to be caused by chronic venous insufficiency.
   - Superficial vein thrombosis (characterised by the appearance of hard, painful veins) and suspected venous incompetence.
   - A venous leg ulcer (a break in the skin below the knee that has not healed within 2 weeks).
   - A healed venous leg ulcer.

   *A team of healthcare professionals who have the skills to undertake a full clinical and duplex ultrasound assessment and provide a full range of treatment.

   †Veins found in association with troublesome lower limb symptoms (typically pain, aching, discomfort, swelling, heaviness and itching).

Not use CEAP Classification for referral guidance
Recommendations – 6/7/8
- Treatment

**Interventional treatment**

6. For people with confirmed varicose veins and truncal reflux:
   - Offer endothermal ablation (see Radiofrequency ablation of varicose veins [NICE interventional procedure guidance 8] and Endovenous laser treatment of the long saphenous vein [NICE interventional procedure guidance 52]).
   - If endothermal ablation is unsuitable, offer ultrasound-guided foam sclerotherapy (see Ultrasound-guided foam sclerotherapy for varicose veins [NICE interventional procedure guidance 440]).
   - If ultrasound-guided foam sclerotherapy is unsuitable, offer surgery.

   If incompetent varicose tributaries are to be treated, consider treating them at the same time.

7. If offering compression bandaging or hosiery for use after interventional treatment, do not use for more than 7 days.

**Non-interventional treatment**

8. Do not offer compression hosiery to treat varicose veins unless interventional treatment is unsuitable.
## Recommendation 11

Duplex ultrasound is recommended as the primary diagnostic test of choice in suspected chronic venous disease, to reliably evaluate the specific venous anatomy and to identify the source and pattern of reflux.

<table>
<thead>
<tr>
<th>Class</th>
<th>Level</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>A</td>
<td>147, 151, 152</td>
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</tbody>
</table>

## Recommendation 12

In the presence of suspected abdominal and or pelvic venous pathology, duplex ultrasound is recommended before phlebography, computed tomography venography, and magnetic resonance venography examinations.

<table>
<thead>
<tr>
<th>Class</th>
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<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>C</td>
<td>169</td>
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</tbody>
</table>

## Recommendation 13

Duplex ultrasound is recommended for the assessment of recurrent varicose veins to identify the source of recurrence.

<table>
<thead>
<tr>
<th>Class</th>
<th>Level</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>C</td>
<td>148, 155, 170</td>
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## Editor’s Choice — Management of Chronic Venous Disease

**Clinical Practice Guidelines of the European Society for Vascular Surgery (ESVS)**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Class</th>
<th>Level</th>
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<tbody>
<tr>
<td>Recommendation 38</td>
<td>III</td>
<td>A</td>
<td>317-320, 328-331</td>
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</tbody>
</table>

Liquid or foam sclerotherapy is not recommended as the first choice treatment for chronic venous disease C2-C6 due to saphenous vein incompetence. It should be used only as primary treatment in selected cases.

| Recommendation 39 | I | A | 314, 328, 329 |

Foam sclerotherapy is recommended as a second choice treatment of varicose veins (C2) and for more advanced stages of chronic venous disease (C3-C6) in patients with saphenous vein incompetence, not eligible for surgery or endovenous ablation.

| Recommendation 40 | IIa | B | 334, 335 |

Foam sclerotherapy should be considered as primary treatment in patients with recurrent varicose veins, and in elderly and frail patients with venous ulcers.

| Recommendation 41 | IIa | B | 308 |

Liquid sclerotherapy should be considered for treating telangiectasias and reticular veins (C1).
• Clinical assessment
• Investigation
• Treatment hierarchy
CLASS TRIAL

CLASS Conclusions

UGFS is associated with:
- significantly less improvement in QoL
- more complications
- reduced ablation rates at 6 months
- and on modelling is not cost-effective at 5 years compared to EVLA or surgery

EVLA compared to surgery: greater gain in SF36, less cost & complications, equivalent VCSS/ablation rates

Vascular Society, November 2013
A Randomized Trial Comparing Treatments for Varicose Veins

Julie Brittenden, M.D., Seonaidh C. Cotton, Ph.D., Andrew Elders, M.Sc.,
Craig R. Ramsay, Ph.D., John Norrie, M.Sc., Jennifer Burr, M.D.,
Bruce Campbell, M.B., B.S., Paul Bachoo, M.B., Ch.B.,
Ian Chetter, M.B., Ch.B., M.D., Michael Gough, M.B., Ch.B.,
Jonathan Earnshaw, D.M., Tim Lees, M.B., Ch.B., M.D.,
Julian Scott, M.B., Ch.B., M.D., Sara A. Baker, M.Sc., Jill Francis, Ph.D.,
Emma Tassie, M.Sc., Graham Scotland, Ph.D., Samantha Wileman, Ph.D.,
and Marion K. Campbell, Ph.D.

Endothermal > Surgery > Foam
A Randomized Trial Comparing Treatments for Varicose Veins


Five year data being collected
Cost-effectiveness of traditional and endovenous treatments for varicose veins

M. S. Gohel¹, D. M. Epstein² and A. H. Davies¹

¹Imperial Vascular Unit, Charing Cross Hospital, London, and ²Centre for Health Economics, University of York, York, UK
Correspondence to: Professor A. H. Davies, Imperial Vascular Unit, Charing Cross Hospital, Fulham Palace Road, London W6 8RF, UK
(e-mail: a.h.davies@imperial.ac.uk)

A Cost-effectiveness Analysis of Surgery, Endothermal Ablation, Ultrasound-guided Foam Sclerotherapy and Compression Stockings for Symptomatic Varicose Veins

G. Marsden a b, M. Perry b, A. Bradbury b, N. Hickey a, K. Kelley a, H. Trender d, D. Wonderling a c, A. H. Davies a

a National Clinical Guideline Centre, Royal College of Physicians, London, UK
b University Department of Vascular Surgery, University of Birmingham, Solihull, UK
c Worcestershire Royal Hospital, Worcester, UK
d Sheffield Vascular Institute, Sheffield Teaching Hospital Foundation Trust, Sheffield, UK

t Department of Surgery & Cancer, Imperial College & Imperial College NHS Trust, Charing Cross Hospital, London, UK

COST-EFFECTIVENESS OF RADIOFREQUENCY ABLATION VERSUS LASER FOR VARICOSE VEINS

Amanda E. Shepherd
Academic Section of Vascular Surgery, Imperial College School of Medicine, Charing Cross Hospital

Maritz Ortega Ortego
Department of Applied Economics, University of Granada

Manj S. Gohel
Academic Section of Vascular Surgery, Imperial College School of Medicine, Charing Cross Hospital

and Department of Vascular Surgery, Whiston Hospital, Liverpool, UK

Cost-effectiveness of ultrasound-guided foam sclerotherapy, endovenous laser ablation or surgery as treatment for primary varicose veins from the randomized CLASS trial

E. Tassie¹, G. Scotland¹ 2, J. Brittenden¹, S. C. Cotton², A. Elders², M. K. Campbell², B. Campbell¹, M. Gough³, J. M. Burr⁴ and C. R. Ramsay² on behalf of the CLASS study team

¹Health Economics Research Unit, ²Health Services Research Unit and ³Division of Applied Medicine, University of Aberdeen, Aberdeen, ⁴Royal Devon and Exeter Hospital and University of Exeter Medical School, Exeter, ⁵Vascular Surgery, Vascular Laboratory, St James’s University Hospital, Leeds, and ⁶School of Medicine, Medical and Biological Sciences, University of St Andrews, St Andrews, UK
Correspondence to: Ms E. Tassie, Health Economics Research Unit, University of Aberdeen, Foresterhill, Aberdeen AB25 2ZD, UK
(e-mail: e.tassie@abdn.ac.uk)
Long term results of compression therapy alone versus compression plus surgery in chronic venous ulceration (ESCHAR): randomised controlled trial

Manjit S Gohel, specialist registrar; Jamie R Barwell, consultant vascular and transplant surgeon; Maxine Taylor, leg ulcer nurse specialist; Terry Chant, vascular nurse specialist; Chris Foy, medical statistician; Jonathan J Earnshaw, consultant surgeon; Brian P Heather, consultant surgeon; David C Mitchell, consultant surgeon; Mark R Whyman, consultant surgeon; Keith R Poskitt, consultant surgeon

No difference in ulcer healing

Surgery reduces venous ulcer recurrence
Chronic Venous Ulcer: Minimally Invasive Treatment of Superficial Axial and Vein Reflux Speeds Healing and Reduces Recurrence


Background: Chronic venous ulcer (CVU) is common and may cause significant financial and emotional burden to patients. Minimally invasive techniques are often utilized to treat CVU, particularly in the lower extremities. The aim of this study was to evaluate the safety and effectiveness of a minimally invasive technique in the treatment of CVU. Methods: Eighty-two patients with CVU with 95 active drainage sites (Clinical Physiology, QAA 09 disease severity) were prospectively enrolled and analyzed. All patients underwent duplex imaging of lower extremities at each visit and were evaluated for the presence of ulcer healing at 1 year. Results: Complete ulcer resolution was achieved in 67 of 82 patients (81.7%). Ulcer recurrence was observed in 15 patients (18.3%). Conclusion: Minimally invasive treatment of CVU is effective and safe, and can significantly reduce the risk of ulcer recurrence.

Healing and Recurrence Rates Following Ultrasound-guided Foam Sclerotherapy of Superficial Venous Reflux in Patients with Chronic Venous Ulceration


University of Nottingham, Nottingham, United Kingdom

Submitted 10 August 2010; accepted 2 August 2010
Available online 27 September 2010

Keywords: Ultrasound-guided foam sclerotherapy; Chronic venous ulcer; Healing rates; Recurrence rates

Abstract: Objectives: To determine healing and recurrence rates after ultrasound-guided foam sclerotherapy (USS) for superficial venous reflux (SVR) in patients with chronic venous ulcers (CVU). Methods: A total of 82 patients with CVU were prospectively enrolled in the study. Ulcer healing rates were assessed at 6 months and at 1 year follow-up. Results: Complete ulcer resolution was achieved in 67 of 82 patients (81.7%). Ulcer recurrence was observed in 15 patients (18.3%). Conclusion: Ultrasound-guided foam sclerotherapy is an effective treatment for chronic venous ulcers and can significantly reduce the risk of recurrence.

Effect of foam sclerotherapy on healing and long-term recurrence in chronic venous leg ulcers


Cheltenham General Hospital, Cheltenham, Gloucestershire, UK

Available online 27 September 2010

Keywords: Foam sclerotherapy; Venous ulceration; Superficial venous reflux; Ulcer healing; Ulcer recurrence

Abstract: Objective: To evaluate the effectiveness of foam sclerotherapy on the healing and recurrence rates of chronic venous leg ulcers. Methods: A total of 82 patients with chronic venous leg ulcers were enrolled in the study. Patients were randomly divided into two groups: Group A received foam sclerotherapy and Group B received conventional treatment. Ulcer healing rates were assessed at 6 months and at 1 year follow-up. Results: Complete ulcer resolution was achieved in 67 of 82 patients (81.7%). Ulcer recurrence was observed in 15 patients (18.3%). Conclusion: Foam sclerotherapy is an effective treatment for chronic venous ulcers and can significantly reduce the risk of recurrence.

**Guideline 3.9: Venous Duplex Ultrasound**

We recommend comprehensive venous duplex ultrasound examination of the lower extremity in all patients with suspected venous leg ulcer. [GRADE - 1; LEVEL OF EVIDENCE - B]

**COMPRESSION**

**Guideline 5.1: Compression—Ulcer Healing**

In a patient with a venous leg ulcer, we recommend compression therapy over no compression therapy to increase venous leg ulcer healing rate. [GRADE - 1; LEVEL OF EVIDENCE - A]

**Guideline 5.2: Compression—Ulcer Recurrence**

In a patient with a healed venous leg ulcer, we suggest compression therapy to decrease the risk of ulcer recurrence. [GRADE - 2; LEVEL OF EVIDENCE - B]

Endorsed by the American College of Phlebology and the Union Internationale de Phlébologie

Thomas F. O’Donnell Jr, MD, Marc A. Passman, MD, William A. Marston, MD, William J. Ennis, DO, Michael Dalsing, MD, Robert L. Kistner, MD, Fedor Lurie, MD, PhD, Peter K. Henke, MD, Monika L. Gloviczki, MD, PhD, Bo G. Eklof, MD, PhD, Julianne Stoughton, MD, Sesadri Raju, MD, Cynthia K. Shortell, MD, Joseph D. Raffetto, MD, Hugo Partsch, MD, Lori C. Pounds, MD, Mary E. Cummings, MD, David L. Gillespie, MD, Robert B. McLafferty, MD, Mohammad Hassan Murad, MD, Thomas W. Wakefield, MD, and Peter Gloviczki, MD

Guideline 3.9: Venous Duplex Ultrasound
We recommend comprehensive venous duplex ultrasound examination of the lower extremity in all patients.

OPERATIVE/ENDOVASCULAR MANAGEMENT

Guideline 6.1: Superficial Venous Reflux and Active Venous Leg Ulcer—Ulcer Healing
In a patient with a venous leg ulcer (C6) and incompetent superficial veins that have axial reflux directed to the bed of the ulcer, we suggest ablation of the incompetent veins in addition to standard compressive therapy to improve ulcer healing. [GRADE - 2; LEVEL OF EVIDENCE - C]

Guideline 6.2: Superficial Venous Reflux and Active Venous Leg Ulcer—Prevent Recurrence
In a patient with a venous leg ulcer (C6) and incompetent superficial veins that have axial reflux directed to the bed of the ulcer, we recommend ablation of the incompetent veins in addition to standard compressive therapy to prevent recurrence. [GRADE - 1; LEVEL OF EVIDENCE - B]

Guideline 6.3: Superficial Venous Reflux and Healed Venous Leg Ulcer
In a patient with a healed venous leg ulcer (C5) and incompetent superficial veins that have axial reflux directed to the bed of the ulcer, we recommend ablation of the incompetent veins in addition to standard compressive therapy to prevent recurrence. [GRADE - 1; LEVEL OF EVIDENCE - C]

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OPERATIVE/ENDOVASCULAR MANAGEMENT

Guideline 6.1: Superficial Venous Reflux and Active Venous Leg Ulcer—Ulcer Healing
In a patient with a venous leg ulcer (C6) and incompetent superficial veins that have axial reflux directed to the bed of the ulcer, we suggest ablation of the incompetent veins in addition to standard compressive therapy to improve ulcer healing. [GRADE - 2; LEVEL OF EVIDENCE - C]

Guideline 6.2: Superficial Venous Reflux and Active Venous Leg Ulcer—Prevent Recurrence
In a patient with a venous leg ulcer (C6) and incompetent superficial veins that have axial reflux directed to the bed of the ulcer, we recommend ablation of the incompetent veins in addition to standard compressive therapy to prevent recurrence. [GRADE - 1; LEVEL OF EVIDENCE - B]

Guideline 6.3: Superficial Venous Reflux and Healed Venous Leg Ulcer
In a patient with a healed venous leg ulcer (C5) and incompetent superficial veins that have axial reflux directed to the bed of the ulcer, we recommend ablation of the incompetent veins in addition to standard compressive therapy to prevent recurrence. [GRADE - 1; LEVEL OF EVIDENCE - C]
Early Venous Reflux Ablation study

450 PATIENTS
Venous ulceration <6 months
Superficial reflux

Compression → Compression + EVRA (<2 weeks)

Primary outcome: time to ulcer healing

Imperial College London
National Institute for Health Research
Short Report

Management of Uncomplicated Varicose Veins – A Case Vignette for a Clinical Decision Proposal

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a) No further diagnostic work-up or treatment. Follow-up at routine visits with the GP once a year. No special treatment recommendations.
b) Recommend the use of compression stockings (e.g., 20–30 mmHg) during work and periods of prolonged standing.
c) Ask the patient for her preferences, explain the evidence for the natural course of the disease and for the various treatment options and decide according to patient’s preference.
d) Consider ablative treatment for varicose veins, only if there is secured funding.
e) Clear statement for varicose vein ablation. Treatment is indicated to prevent further evolution of venous disorder in this relatively young and otherwise healthy subject.
Management Strategies for Patients with Varicose Veins (C2–C6): Results of a Worldwide Survey

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WHAT THIS PAPER ADDS
This is the first worldwide survey to show how patient related and duplex ultrasound related factors influence management strategies in varicose veins patient (C2–C6). The identification of these factors may contribute to a more personalized approach in clinical practice.
Table 1. Modifications of basic case vignettes in the survey.

**Case vignette 1 (C2SEpAs2,5Pr):**

*Complaints*
- Asymptomatic, only cosmetic concern (C2AEpAs2,5Pr)

*Patient characteristics*
- Older age >80 yrs
- Gender: female
- Peripheral arterial disease (ankle brachial index <0.6)
- High body mass index (>40 kg/m²)
- Chronic oral anticoagulant treatment

*Clinical findings:*
- Skin changes: pigmentation (C2,4aSEpAs2,5Pr)
- Venous ulceration (C2,6SEpAs2,3,5Pr)

*Duplex ultrasound findings*
- Competent terminal valve
- Focal dilatation of GSV above knee (12 mm)
- Small diameter of GSV (cut off value determined by participant)
- Large diameter of GSV (cut off value determined by participant)

**Case vignette 2 (C2SEpAs2,5Pr):**

*Duplex ultrasound findings:*
- Diameter of short refluxing segment <5 mm
- Diameter of short refluxing segment >8 mm
- Length of refluxing GSV segment (cut off value determined by participant)
Table 1. Modifications of basic case vignettes in the survey.

Case vignette 1 (C2SEpAs2,5Pr):

**Complaints**
- Asymptomatic, only cosmetic concern (C2AEpAs2,5Pr)

**Patient characteristics**
- Older age >80 yrs
- Gender: female

Table 3. Treatment strategies proposed by the participants for the basic case vignettes (V1 and V2).

<table>
<thead>
<tr>
<th>Treatment strategies</th>
<th>V1, n (%)</th>
<th>V2, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVTA</td>
<td>43 (20)</td>
<td>16 (8)</td>
</tr>
<tr>
<td>EVTA + phlebectomies</td>
<td>73 (35)</td>
<td>67 (32)</td>
</tr>
<tr>
<td>EVTA + UGFS of tributaries</td>
<td>17 (8)</td>
<td>9 (4)</td>
</tr>
<tr>
<td>Ligation + stripping + phlebectomies</td>
<td>12 (6)</td>
<td>10 (5)</td>
</tr>
<tr>
<td>EVTA + ligation</td>
<td>13 (6)</td>
<td>15 (7)</td>
</tr>
<tr>
<td>UGFS of GSV + UGFS of tributaries</td>
<td>9 (4)</td>
<td>11 (5)</td>
</tr>
<tr>
<td>Single phlebectomies</td>
<td>5 (2)</td>
<td>23 (11)</td>
</tr>
<tr>
<td>Alternative</td>
<td>39 (19)</td>
<td>60 (28)</td>
</tr>
</tbody>
</table>

EVTA = endovenous thermal ablation; UGFS = ultrasound-guided foam sclerotherapy; GSV = great saphenous vein.

Length of refluxing GSV segment (cut off value determined by participant)
Factors affecting treatment decision

Figure 2. Influence of cosmetic complaints, patient characteristics and clinical findings on management strategy (n = 211). p-values represent the difference in distribution between vignette 1 and modified vignettes (cosm, age, PAD, BMI, AC, fem, C4, C6) and were measured using the Stuart-Maxwell test. cosm = only cosmetic complaints; PAD = peripheral arterial disease; BMI = body mass index; AC = anticoagulant treatment; fem = female gender; EVTA = endovenous thermal ablation; phleb = phlebectomies; UGFS = ultrasound-guided foam sclerotherapy; GSV = great saphenous vein; MECS = medical elastic compression stockings.
Factors affecting treatment decision

Age
PAD
BMI
Disease stage
Anti-coagulant

Figure 2. Influence of cosmetic complaints, patient characteristics and clinical findings on management strategy (n = 211). p-values represent the difference in distribution between vignette 1 and modified vignettes (cosm, age, PAD, BMI, AC, fem, C4, C6) and were measured using the Stuart-Maxwell test. cosm = only cosmetic complaints; PAD = peripheral arterial disease; BMI = body mass index; AC = anti-coagulant treatment; fem = female gender; EVTA = endovenous thermal ablation; phleb = phlebectomy; UGFS = ultrasound-guided foam sclerotherapy; GSV = great saphenous vein; MECS = medical elastic compression stockings.
Factors affecting treatment decision

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Duplex findings influence on treatment decision
Duplex findings influence on treatment decision

All measured parameters influenced decision making.
Figure 4. Reasons for further visits after initial follow up. Systematic was defined as “I would schedule patients for further follow up visits, irrespective of symptoms, physical and/or ultrasound examination.” DUS = duplex ultrasound.
Residual tributaries

Figure 5. Influence of different characteristics of persisting refluxing tributaries on the preferred management strategy. UGFS = ultrasound-guided foam sclerotherapy.
Residual tributaries

Phlebectomy is King

Figure 5. Influence of different characteristics of persisting refluxing tributaries on the preferred management strategy. UGFS = ultrasound-guided foam sclerotherapy.
EVTA is the most common treatment option.

Increasing age associated with more minimalistic treatment.

Increase diameter of GSV associated with terminal valve incompetence and hence greatest influence on treatment choice.
STUFF YOU AGREE WITH

CONFIRMATION
EXPECTATIONS
BIAS
CORRELATED
EARLY
CONTRADICTORY
CUSTODY
SELECTIVELY
CONFIRMATORY
NEUTRAL
EXPERIMENTAL
ARGUMENT
JURORS
PRIMACY
PREFERENCE
STUDY
PERSON
CONCLUSION
RESEARCH
FALSE DISCREDITED
SCIENTIFIC
INFORMATION
SERIES
SOCIAL
BALL
EXPERIMENTAL
FALSIFICATION
LOGIST
Research Recommendations

Key research recommendations

1. In people with varicose veins at CEAP (Clinical, etiological, anatomical and pathophysiological) stage C2 or C3, what are the factors that influence progression of the disease to CEAP stages C5 or C6?

2. What is the clinical and cost effectiveness of compression hosiery versus no compression for the management of symptomatic varicose veins?

3. What is the clinical and cost effectiveness of compression bandaging or hosiery after interventional treatment for varicose veins compared with no compression? If there is benefit, how long should compression bandaging or hosiery be worn for?

4. What is the clinical and cost effectiveness of concurrent phlebectomies or foam sclerotherapy for varicose tributaries during truncal endothermal ablation for varicose veins compared with:
   • truncal endothermal ablation without concurrent phlebectomies or foam sclerotherapy?
   • truncal endothermal ablation with phlebectomies or foam sclerotherapy, if needed, 6–12 weeks later?

5. What is the optimal treatment (compression, surgery, endothermal ablation or foam sclerotherapy) for varicose veins at each of the CEAP stages, that is CEAP stages 2–3, CEAP stage 4 and CEAP stages 5–6?
That's all Folks!