The Utility of the Venous Clinical Severity Score in Limbs Treated by RF Saphenous Vein Ablation

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SUNY at Buffalo
DeGraff Memorial Hospital

No conflict of interest or relevant financial relationships to report
“A man who has committed a mistake and doesn’t correct it, is committing another mistake.”  Confucius

CEAP

- Clinical presentation: 1-6
- Etiologic basis: Primary, Secondary, Congenital
- Anatomic distribution: Superficial, Perforator, Deep
  veins divided into 18 anatomic segments
- Pathophysiologic basis: Reflux, Obstruction, Both

- Excellent descriptive tool
- Relatively static
- Poor method to assess the usefulness of an intervention
Venous Clinical Severity Score (VCSS)

- Proposed by American Venous Forum Ad Hoc Committee on Venous Assessment March 2000
- Score from 0 – 30
- Most validated and reliable method available for venous surgery outcome assessment
- Evaluative instrument designed to follow clinical condition over time
- Easy to use
- Underutilized

VCSS Components

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Absent (0)</th>
<th>Mild (1)</th>
<th>Moderate (2)</th>
<th>Severe (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>None</td>
<td>Occasional</td>
<td>Daily</td>
<td>Daily w/ meds</td>
</tr>
<tr>
<td>Varicose veins</td>
<td>None</td>
<td>Few</td>
<td>Multiple</td>
<td>Extensive</td>
</tr>
<tr>
<td>Venous edema</td>
<td>None</td>
<td>Evening only</td>
<td>Afternoon</td>
<td>Morning</td>
</tr>
<tr>
<td>Skin Pigmentation</td>
<td>None</td>
<td>Limb, old</td>
<td>Difficult, more recent</td>
<td>Widespread</td>
</tr>
<tr>
<td>Inflammation</td>
<td>None</td>
<td>Mild cellulitis</td>
<td>Moderate cellulitis</td>
<td>Severe</td>
</tr>
<tr>
<td>Induration</td>
<td>None</td>
<td>Focal &lt; 5 cm</td>
<td>&lt; 1/3 gaiter</td>
<td>&gt; 1/3 gaiter</td>
</tr>
<tr>
<td>No. active ulcers</td>
<td>None</td>
<td>1</td>
<td>2</td>
<td>&gt; 2</td>
</tr>
<tr>
<td>Active ulcer size</td>
<td>None</td>
<td>&lt; 2 cm</td>
<td>2 – 6 cm</td>
<td>&gt; 6 cm</td>
</tr>
<tr>
<td>Ulcer duration</td>
<td>None</td>
<td>&lt; 3 mo</td>
<td>3 – 12 mo</td>
<td>&gt; 1 yr</td>
</tr>
<tr>
<td>Compression Therapy</td>
<td>None</td>
<td>Intermittent</td>
<td>Most days</td>
<td>Fully comply</td>
</tr>
</tbody>
</table>

The Objectives
Objectives

- Assess the clinical outcome of a large cohort of patients undergoing saphenous vein radiofrequency ablation (RFA) using the VCSS
- Identify risk factors associated with treatment failure

The Methods

Vascular Lab Evaluation

- Assess deep system for thrombus
- Rule out venous outflow obstruction
- Assess valvular competency in deep, superficial and perforator systems
Candidates for Surgical Intervention

- Symptomatic varicosities w/ w/o swelling
- Recurrent superficial phlebitis
- Varicosity bleeding or erosion
- Chronic skin discoloration or induration
- Active or recurrent venous stasis ulcer

Exclusion criteria

- DVT, outflow obstruction
- PAD (ABI <0.8)
- Planned future pregnancy
- Non-compliance
- Severe obesity making US visualization of SFJ difficult
**RFA Procedure (ClosurePlus)**

- Catheter inserted in refluxing vein
- Catheter Positioned: Electrodes deployed
- RF Energy heats and contracts vein wall
- Catheter slowly withdrawn, closing vein
- Denuded vein is physically narrowed

**SVRFA Procedure Method**

1. **Tumescent +/- basal anesthesia**
2. Access vein with IV cannula or sheath
   - Location typically at knee
3. Insert catheter into vein and advance catheter tip to SFJ using ultrasound guidance
4. Create a near-bloodless field
   - Heparinized saline infusion at tip of catheter
   - Manual compression at groin
   - Trendelenburg
5. RF heating of vein lumen to 85°C +/- 3°C
6. Slow, temperature-guided catheter pullback at 2-3 cm/min
7. Assess post-operative occlusion with ultrasound

**Tumescent Infiltration**

- Dilution – 0.1% Lidocaine with epi
- Volume
  - Typically 220-320 cc for single vein segment (10cc/cm)
- Technique
  - Longitudinal infiltration initially beyond SFJ
  - Transverse infiltration also at SFJ
  - Transverse assessment of quality of infiltration
Tumescent Infiltration: Longitudinal View

Note complete vein wall compression around catheter and tumescent above and below vein.

Case Study 1

Pre-op Duplex Scan:
GSV diameter: 2.14cm

Case Study 2

Placement of the 8Fr Catheter

Electrodes opened

Distance to SFJ

Note incomplete contact of electrodes against vein wall.
Tumescent fluid circumferentially compresses vein wall against electrodes.

GSV with thickened vein wall, residual vein lumen ~4mm.

The Results
Our Data Summary

- Total 682 limbs in 499 patients over 18 months since September 2003
- Average Age = 53 ± 13 years

<table>
<thead>
<tr>
<th>Gender</th>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>34%</td>
<td>68%</td>
</tr>
<tr>
<td>Female</td>
<td>52%</td>
<td>48%</td>
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</table>

- Screening, and Follow-up at 4 days, 4 weeks, 4 months, and 1 year

Our Data Summary – CEAP Screening

Figure 1: CEAP classification at the time of screening

Our Data Summary – VCSS Screening

Figure 2: VCSS classification at the time of screening
### VCSS Components

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Absent (0)</th>
<th>Mild (1)</th>
<th>Moderate (2)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>None</td>
<td>Occasional</td>
<td>Daily</td>
<td>Daily w/ meds</td>
</tr>
<tr>
<td>Venous reflux</td>
<td>None</td>
<td>Few</td>
<td>Multiple</td>
<td>Extensive</td>
</tr>
<tr>
<td>Varicose veins</td>
<td>None</td>
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<td>None</td>
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<td>Afternoon</td>
<td>Morning</td>
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<tr>
<td>Skin Pigmentation</td>
<td>None</td>
<td>Limited, old</td>
<td>Diffuse, more recent</td>
<td>Severe</td>
</tr>
<tr>
<td>Inflammation</td>
<td>None</td>
<td>Mild cellulitis</td>
<td>Mod cellulitis</td>
<td>Severe</td>
</tr>
<tr>
<td>Induration</td>
<td>None</td>
<td>Focal &lt; 5 cm</td>
<td>&lt; 1/3 gaiter</td>
<td>&gt; 1/3 gaiter</td>
</tr>
<tr>
<td>No. active ulcers</td>
<td>None</td>
<td>1</td>
<td>2</td>
<td>&gt; 2</td>
</tr>
<tr>
<td>Active ulcer size</td>
<td>None</td>
<td>&lt; 2 cm</td>
<td>2 – 6 cm</td>
<td>&gt; 6 cm</td>
</tr>
<tr>
<td>Ulcer duration</td>
<td>None</td>
<td>&lt;3 mo</td>
<td>3 – 12 mo</td>
<td>&gt; 1 yr</td>
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<tr>
<td>Compression Therapy</td>
<td>None</td>
<td>Intermittent</td>
<td>Most days</td>
<td>Fully comply</td>
</tr>
</tbody>
</table>

### Our Data Summary – VCSS Screening

- Mean VCSS Screening = 8.8 ± 3.8

### Our Data Summary – VCSS Overall

- Overall VCSS
  - 3-4 Days Follow Up: 8.6
  - 3-4 Weeks Follow Up: 5.2
  - 3-4 Months Follow Up: 4.1
  - 3-4 Months Follow Up: 4.3
  - 1-Year Follow Up: 3.7
Average Score for VCSS Components

VCSS Component Change

Longitudinal VCSS Component Change

Data are given as number (percentage). † P < .0001 for all other variables.

*52 ulcer patients treated. 86% healed.
Longitudinal VCSS Component Change

<table>
<thead>
<tr>
<th>Duration of ulcers, mo</th>
<th>0</th>
<th>1-2</th>
<th>3-12</th>
<th>&gt;12</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. (%)</td>
<td>596</td>
<td>317</td>
<td>33</td>
<td>6</td>
</tr>
<tr>
<td>Active ulcer size, cm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>596 (92.0)</td>
<td>624 (98.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;2</td>
<td>23 (3.5)</td>
<td>5 (0.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-6</td>
<td>23 (3.5)</td>
<td>1 (0.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;6</td>
<td>6 (0.9)</td>
<td>1 (0.2)</td>
<td></td>
<td></td>
</tr>
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</table>

Compression therapy

<table>
<thead>
<tr>
<th>None</th>
<th>Intermittent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. (%)</td>
<td>7 (1.1)</td>
</tr>
<tr>
<td>Fully comply</td>
<td>165 (25.5)</td>
</tr>
</tbody>
</table>

VCSS score

<table>
<thead>
<tr>
<th>Mean</th>
<th>P&lt;0.0001</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.8</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *Data are given as number percentage. †P < .001, ‡P < .0001 for all other analyses.

Our Data Summary – Complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperpigmentation</td>
<td>490 (0.6)</td>
</tr>
<tr>
<td>Superficial phlebitis</td>
<td>76 (12.0)</td>
</tr>
<tr>
<td>Paresthesia</td>
<td>2 (0.3)</td>
</tr>
<tr>
<td>Erythema</td>
<td>16 (2.5)</td>
</tr>
<tr>
<td>Ecchymosis</td>
<td>83 (13.2)</td>
</tr>
<tr>
<td>Infection</td>
<td>3 (0.5)</td>
</tr>
<tr>
<td>Skin thermal injury</td>
<td>0</td>
</tr>
<tr>
<td>DVT</td>
<td>1 (0.2)</td>
</tr>
</tbody>
</table>

Among 633 patients

Our Data Summary

- One post-thrombotic syndrome patient developed a non-occlusive thrombus extension from SFJ into the common femoral vein (0.2%) following the procedure and was replaced on his Coumadin.
- GSV Occlusion rate:

<table>
<thead>
<tr>
<th>Duration</th>
<th>GSV Occlusion rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-4 Days</td>
<td>99.1%</td>
</tr>
<tr>
<td>3-4 Weeks</td>
<td>96.1%</td>
</tr>
<tr>
<td>3-4 Months</td>
<td>94.4%</td>
</tr>
<tr>
<td>Last follow-up</td>
<td>87.1%</td>
</tr>
</tbody>
</table>
Our Data Summary – Patient Satisfaction

![Graph showing patient satisfaction over time.]

- partly or very satisfied

Factors Associated with Successful Occlusion

<table>
<thead>
<tr>
<th>Factor</th>
<th>RR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (increasing)</td>
<td>0.98</td>
<td>(0.96, 1.00)</td>
<td>0.06</td>
</tr>
<tr>
<td>Female gender</td>
<td>0.19</td>
<td>(0.09, 0.41)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Catheter (6/8 F)</td>
<td>0.74</td>
<td>(0.43, 1.28)</td>
<td>0.28</td>
</tr>
<tr>
<td>GSV side (R/L)</td>
<td>1.03</td>
<td>(0.98, 1.09)</td>
<td>0.19</td>
</tr>
<tr>
<td>Tumescent 250+ cc</td>
<td>0.59</td>
<td>(0.34, 1.02)</td>
<td>0.06</td>
</tr>
</tbody>
</table>

The Visual Proof
Closure With No Adjunctive Phlebectomy

<table>
<thead>
<tr>
<th>Attribute</th>
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<tbody>
<tr>
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<tr>
<td>Varicose veins</td>
<td>None</td>
<td>Few</td>
<td>Multiple</td>
<td>Extensive</td>
</tr>
<tr>
<td>Venous edema</td>
<td>None</td>
<td>Slight</td>
<td>Moderate</td>
<td>Severe</td>
</tr>
<tr>
<td>Skin pigmentation</td>
<td>None</td>
<td>None</td>
<td>Mild cellulitis</td>
<td>Severe</td>
</tr>
<tr>
<td>Edema</td>
<td>None</td>
<td>Focal</td>
<td>&lt; 1/3 gaiter</td>
<td>&gt; 1/3 gaiter</td>
</tr>
<tr>
<td>No. active ulcers</td>
<td>None</td>
<td>1</td>
<td>2</td>
<td>&gt; 2</td>
</tr>
<tr>
<td>Ulcer size</td>
<td>None</td>
<td>&lt; 2 cm</td>
<td>2 – 6 cm</td>
<td>&gt; 6 cm</td>
</tr>
<tr>
<td>Ulcer duration</td>
<td>None</td>
<td>&lt; 3 mo</td>
<td>3 – 12 mo</td>
<td>&gt; 1 yr</td>
</tr>
<tr>
<td>Compression therapy</td>
<td>None</td>
<td>Intermittent</td>
<td>Most days</td>
<td>Fully comply</td>
</tr>
</tbody>
</table>

Pain=1, VV=2, Edema=0, Pigmentation=0, Inflammation=0, Induration=0, Active ulcers, size, duration=0, Compression therapy=2
Total VCSS Score = 7    CEAP = 3

1 week post op

Closure With No Adjunctive Phlebectomy

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Absent (0)</th>
<th>Mild (1)</th>
<th>Moderate (2)</th>
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<td>Venous edema</td>
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<td>Slight</td>
<td>Moderate</td>
<td>Severe</td>
</tr>
<tr>
<td>Skin pigmentation</td>
<td>None</td>
<td>None</td>
<td>Mild cellulitis</td>
<td>Severe</td>
</tr>
<tr>
<td>Edema</td>
<td>None</td>
<td>Focal</td>
<td>&lt; 1/3 gaiter</td>
<td>&gt; 1/3 gaiter</td>
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<tr>
<td>No. active ulcers</td>
<td>None</td>
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<td>2</td>
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</tr>
<tr>
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<td>None</td>
<td>&lt; 2 cm</td>
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<td>&gt; 6 cm</td>
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<td>3 – 12 mo</td>
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<tr>
<td>Compression therapy</td>
<td>None</td>
<td>Intermittent</td>
<td>Most days</td>
<td>Fully comply</td>
</tr>
</tbody>
</table>

Pain=0, VV=1, Edema=1, Pigmentation=0, Inflammation=0, Induration=0, Active ulcers, size, duration=0, Compression therapy=2
Total VCSS Score = 4    CEAP = 3

1 week post op
### Closure With No Adjunctive Procedure

#### Table

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Absent (0)</th>
<th>Mild (1)</th>
<th>Moderate (2)</th>
<th>Severe (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pain</strong></td>
<td>None</td>
<td>Occasional</td>
<td>Daily</td>
<td>Daily w/ meds</td>
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<td><strong>Varicose veins</strong></td>
<td>None</td>
<td>Few</td>
<td>Multiple</td>
<td>Extensive</td>
</tr>
<tr>
<td><strong>Venous edema</strong></td>
<td>None</td>
<td>Occasional</td>
<td>Afternoon</td>
<td>Morning</td>
</tr>
<tr>
<td><strong>Pigmentation</strong></td>
<td>None</td>
<td>Limited, old</td>
<td>Limited, recent</td>
<td>Wider, recent</td>
</tr>
<tr>
<td><strong>Induration</strong></td>
<td>None</td>
<td>Mild cellulitis</td>
<td>Milder cellulitis</td>
<td>Severe</td>
</tr>
<tr>
<td><strong>Active ulcer site</strong></td>
<td>None</td>
<td>&lt; 2 cm</td>
<td>2 – 6 cm</td>
<td>&gt; 6 cm</td>
</tr>
<tr>
<td><strong>Ulcer size</strong></td>
<td>None</td>
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<td>3 – 12 cm</td>
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<tr>
<td><strong>Compression therapy</strong></td>
<td>None</td>
<td>Intermittent</td>
<td>Most days</td>
<td>Fully comply</td>
</tr>
</tbody>
</table>

#### Pre 5 days post-op

Pain=0, VV=0, Edema=0, Pigmentation=0, Inflammation=0, Induration=0, Active ulcers, size, duration=0, Compression therapy=0
Total VCSS Score = 0 CEAP = 0

Pain=0, VV=1, Edema=1, Pigmentation=0, Inflammation=0, Induration=0, Active ulcers, size, duration=0, Compression therapy=0
Total VCSS Score = 0 CEAP = 3
**Closure With No Adjunctive Phlebectomy**

**Pain:**
- Absent (0)
- Mild (1)
- Moderate (2)
- Severe (3)

**Varicose Veins:**
- None
- Few
- Multiple
- Extensive

**Edema:**
- Morning
- Afternoon
- Evening
- Only

**Skin Pigmentation:**
- None
- Limited, old
- Diffuse, more recent
- Wider, recent

**Inflammation:**
- None
- Mild
- Moderate
- Severe

**Induration:**
- None
- Focal (< 5 cm)
- < 1/3 gaiter
- > 1/3 gaiter

**Active Ulcers:**
- None
- 1
- 2
- > 2

**Ulcer Size:**
- < 2 cm
- 2 – 6 cm
- > 6 cm

**Ulcer Duration:**
- < 3 mo
- 3 – 12 mo
- > 1 yr

**Compression Therapy:**
- None
- Intermittent
- Most days
- Fully comply

---

**4 days post op**

**Pain:**
- Mild (1)
- Moderate (2)
- Severe (3)

**Varicose Veins:**
- None
- Few
- Multiple
- Extensive

**Edema:**
- Morning
- Afternoon
- Evening
- Only

**Skin Pigmentation:**
- None
- Limited, old
- Diffuse, more recent
- Wider, recent

**Inflammation:**
- None
- Mild
- Moderate
- Severe

**Induration:**
- None
- Focal (< 5 cm)
- < 1/3 gaiter
- > 1/3 gaiter

**Active Ulcers:**
- None
- 1
- 2
- > 2

**Ulcer Size:**
- < 2 cm
- 2 – 6 cm
- > 6 cm

**Ulcer Duration:**
- < 3 mo
- 3 – 12 mo
- > 1 yr

**Compression Therapy:**
- None
- Intermittent
- Most days
- Fully comply

---

**Pre**

**Pain:**
- 2
- VV: 3
- Edema: 3
- Pigmentation: 2

**Total VCSS Score:** 13     **CEAP:** 4

---

**4 days post op**

**Pain:**
- 1
- VV: 1
- Edema: 1
- Pigmentation: 2

**Total VCSS Score:** 7     **CEAP:** 1
### Comparison Bilateral Disease

**Pre op right**

- Pain: 3
- Venous reflux: 3
- Edema: 3
- Pigmentation: 1
- Inflammation: 0
- Induration: 1
- Active ulcers: 0
- Size, duration: 0
- Compression therapy: 3
- Total VCSS Score: 12
- CEAP: 4

**3 mo post op**

- Pain: 0
- Venous reflux: 1
- Edema: 0
- Pigmentation: 1
- Inflammation: 0
- Induration: 0
- Active ulcers: 0
- Size, duration: 0
- Compression therapy: 2
- Total VCSS Score: 4
- CEAP: 4

### Closure and leg ulcers

**Pre**

- Pain: 3
- Venous reflux: 2
- Edema: 2
- Pigmentation: 2
- Inflammation: 2
- Induration: 2
- Active ulcers: 1
- Size: 2
- Duration: 1
- Compression therapy: 1
- Total VCSS Score: 18
- CEAP: 6

**2 weeks post op**

- Pain: 0
- Venous reflux: 1
- Edema: 1
- Pigmentation: 1
- Inflammation: 0
- Induration: 1
- Active ulcers: 0
- Size, duration: 0
- Compression therapy: 3
- Total VCSS Score: 7
- CEAP: 5

### Attribute Absent (0) Mild (1) Moderate (2) Severe (3)

- **Pain**
  - None
  - Occasional
  - Daily
  - Daily w/ meds

- **Varicose veins**
  - None
  - Few
  - Multiple
  - Extensive

- **Venous edema**
  - None
  - Evening only
  - Afternoon
  - Morning

- **Skin pigment ation**
  - None
  - Limited, old
  - Diffuse, more recent
  - Wider, recent

- **Inflammation**
  - None
  - Mild
  - Cellulitis
  - Severe

- **Induration**
  - None
  - < 1/3 gaiter
  - > 1/3 gaiter

- **No. active ulcers**
  - None
  - 1
  - 2
  - > 2

- **Active ulcer size**
  - None
  - < 2 cm
  - 2 – 4 cm
  - > 6 cm

- **Ulcer duration**
  - None
  - < 3 mo
  - 3 – 12 mo
  - > 1 yr

- **Compression therapy**
  - None
  - Intermittent
  - Most days
  - Fully comply
## Closure and leg ulcers

### One week post op

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Absent (0)</th>
<th>Mild (1)</th>
<th>Moderate (2)</th>
<th>Severe (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pain</strong></td>
<td>Occasional</td>
<td>Daily</td>
<td>Daily w/ med</td>
<td></td>
</tr>
<tr>
<td><strong>Varicose veins</strong></td>
<td>None</td>
<td>Few</td>
<td>Multiple</td>
<td>Extensive</td>
</tr>
<tr>
<td><strong>Venous edema</strong></td>
<td>None</td>
<td>Evening</td>
<td>Morning</td>
<td></td>
</tr>
<tr>
<td><strong>Pigmentation</strong></td>
<td>None</td>
<td>Limited</td>
<td>Old</td>
<td>Diffuse, recent, old</td>
</tr>
<tr>
<td><strong>Inflammation</strong></td>
<td>None</td>
<td>Mild cellulitis</td>
<td>Mild cellulitis</td>
<td>Severe</td>
</tr>
<tr>
<td><strong>Induration</strong></td>
<td>None</td>
<td>&lt; 5 cm</td>
<td>&lt; 1/3 gaiter</td>
<td>&gt; 1/3 gaiter</td>
</tr>
<tr>
<td><strong>Active ulcers</strong></td>
<td>None</td>
<td>1</td>
<td>2</td>
<td>&gt; 2</td>
</tr>
<tr>
<td><strong>Active ulcer size</strong></td>
<td>None</td>
<td>&lt; 2 cm</td>
<td>2 – 4 cm</td>
<td>&gt; 6 cm</td>
</tr>
<tr>
<td><strong>Ulcer duration</strong></td>
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<td>3 – 12 mo</td>
<td>&gt; 1 yr</td>
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<tr>
<td><strong>Compression therapy</strong></td>
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<td>Intermittent</td>
<td>Most days</td>
<td>Fully comply</td>
</tr>
</tbody>
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### 47 days post op

<table>
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<tr>
<th>Attribute</th>
<th>Absent (0)</th>
<th>Mild (1)</th>
<th>Moderate (1)</th>
<th>Severe (2)</th>
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<td>Most days</td>
<td>Fully comply</td>
</tr>
</tbody>
</table>

### Summary

- **Pre:** Pain=3, VV=2, Edema=3, Pigmentation=2, Inflammation=2, Active ulcer size=1, Size=2, duration=3, Compression therapy=3
  - VCSS = 25     CEAP = 6
- **One week post op:** Pain=1, VV=1, Edema=2, Pigmentation=2, Inflammation=1, Active ulcer size=1, Size=2, duration=3, Compression therapy=3
  - VCSS = 15     CEAP = 5
- **47 days post op:** Pain=0, VV=1, Edema=1, Pigmentation=2, Inflammation=0, Active ulcer size=0, Size=2, duration=3, Compression therapy=3
  - VCSS = 9     CEAP = 5
Closure and leg ulcers

**Pre**

- **Pain**: 1
- **VV**: 1
- **Edema**: 3
- **Pigmentation**: 3
- **Inflammation**: 0
- **Induration**: 2
- **Active ulcers**: 1
- **Size, duration**: 0
- **Compression therapy**: 3

- **VCSS**: 11
- **CEAP**: 5

**3 weeks post op**

- **Pain**: 1
- **VV**: 1
- **Edema**: 3
- **Pigmentation**: 3
- **Inflammation**: 0
- **Induration**: 2
- **Active ulcers**: 1
- **Size, duration**: 0
- **Compression therapy**: 3

- **VCSS**: 11
- **CEAP**: 5

**1 week post**

- **Pain**: 3
- **VV**: 3
- **Edema**: 3
- **Pigmentation**: 3
- **Inflammation**: 2
- **Induration**: 3
- **Active ulcers**: 1
- **Size, duration**: 3
- **Compression therapy**: 3

- **VCSS**: 26
- **CEAP**: 6

**3 months post op**

- **Pain**: 2
- **VV**: 2
- **Edema**: 1
- **Pigmentation**: 2
- **Inflammation**: 1
- **Induration**: 2
- **Active ulcers**: 1
- **Size, duration**: 3
- **Compression therapy**: 3

- **VCSS**: 20
- **CEAP**: 6

**Pain**: 0
- **VV**: 1
- **Edema**: 0
- **Pigmentation**: 2
- **Inflammation**: 0
- **Induration**: 1
- **Active ulcers**: 0
- **Size, duration**: 0
- **Compression therapy**: 2

- **VCSS**: 6
- **CEAP**: 5

**Article Conclusions**

- RFA results in clinical improvement by VCSS.
- Elimination of superficial reflux encourages ulcer healing.
- Volume of tumescent, age, and female gender are all associated with high success rate of occlusion.
- Treatment to the knee is sufficient for the majority of patients with few adverse events.
- Waiting period of four months should be endured prior to the adjunctive treatment of residual varicosities.
Article Conclusions (cont.)

- Each of VCSS components useful, significant and easy to use
- VCSS is an excellent stand alone tool for assessing outcomes following RFA
- VCSS with CEAP should be used for outcome assessment in any study comparing different treatment modalities for SV ablation so we all know what we are really talking about

“It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change.”  Charles Darwin