Ten Year Results of Radiofrequency Ablation (VNUS Closure®) of the Great Saphenous Vein

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Background

- Traditional surgery the preferred primary treatment of varicose veins in the UK:
  - 83% National Health Service
  - 72% Private practice

*Edwards et al, 2009  
Background

- Up to 70% recurrence following traditional surgery *
  - Incomplete treatment
  - Strip−tract revascularisation
  - De novo reflux (disease progression)

*Campbell et al, 2003  **Munasinghe et al. 2007
Background

- March 1999 started radiofrequency ablation (RFA) (VNUS Closure®)
  - GA
  - Eschmark bandage
  - 20 secs/cm at 85°C
Background

Catheter Closed

Catheter Open

Catheter Open
Inside of Vein –
Radiofrequency
Destroying Vein Wall
Background

EVG Stain

Normal GSV

Transmural death
post-treatment GSV

Whiteley & Holdstock, 2004
Vasc and Endovasc Challenges
Background

- Short term success proven

Fassiadis et al, 2003
Minim Invasive Ther Alied Technol.
Aim

- To review the results of VNUS Closure after more than 10 years
Method

- Patients who had VNUS Closure 10 years ago identified:
  - Postal invitation
  - Patient questionnaire on arrival
    - ‘Pleased to have had the procedure’
    - Would recommend
    - Satisfaction
Method

- Clinical recurrence (CEAP score) noted
  - Source recorded

- Duplex Ultrasound report by experienced Vascular Technologist not involved in the original treatment
  - Patent sections of treated veins measured
  - GSV classified into ¼ categories
Categories – Success

1) Total Atrophy

2) Minor, non-significant patency

GSV max diameter  SSV max diameter

GSV max diameter  SSV max diameter
Categories – Failure

3) Partial Failure, Refluxing Stump

4) Complete Re-opening
Results

- 359 patients invited for review
- 112 patients (185 legs) attended
  - 44 explained inability to attend
- Response rate of 156/359 (43.5%)
Results

- Time between treatment and review:
  - 9.8 years to 13.2 years (Mean 11.1 years)

- At procedure:
  - Age 19 to 78 (Mean 52 years)

- At review:
  - Age 31 to 90 (Mean 63 years)

- Female : Male = 3 : 1
Closure of the GSV

- **Grade 1:** total success
- **Grade 2:** success with minor, inconsequential patency
- **Grade 3:** patent, refluxing stump
- **Grade 4:** complete re-opening

<table>
<thead>
<tr>
<th>Grade</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>127</td>
<td>68.6%</td>
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<tr>
<td>Grade 2</td>
<td>46</td>
<td>24.9%</td>
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<tr>
<td>Grade 3</td>
<td>11</td>
<td>5.9%</td>
</tr>
<tr>
<td>Grade 4</td>
<td>1</td>
<td>0.5%</td>
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</tbody>
</table>
14/185 (7.6%) legs had intermittent treatment
  ◦ 3/185 (1.6%) for a refluxing stump
    • (included in category 3 on the previous slide)
  ◦ 11/185 (5.9%) for de novo reflux (disease progression)
Clinical recurrence

- 77/185 (41.6%) had clinical recurrence at review
  - 60/185 (32.4%) due to de novo reflux
  - 4/185 (2.2%) due to SFJ neovascularisation from previous surgery
  - 7/185 (3.8%) due to small vessels at the SFJ
  - 9/185 (4.9%) due to failure of the VNUS
    - 3/185 (1.6%) VNUS failures no longer causing recurrence due to re-intervention
Minor recurrence

- 27/185 (14.6%) had reticular and minor thread veins with no deep system attachment
Patient Satisfaction

- 91.8% of patients pleased to have had VNUS
- 93.7% would recommend the procedure
Summary

- At 11.1 years after VNUS Closure for GSV reflux:
  - 93.5% successful closure of treated vein
  - Only 1 vein completely re-opened
Radiofrequency ablation is highly successful at over 10 years

Associated with high patient satisfaction

Disease progression now the major cause of clinical recurrence