Modern management of varicose veins

Prof TV Mulaudzi
Vascular and Endovascular Unit
Steve Biko Academic Hospital. University of Pretoria
History

Ebers papyrus (ca. 1550 BC)  foot of the Acropolis 4th c BC
History

- Hippocrates (460-377 BC) recognized the correlation between VV’s and ulceration
- 1890, Friedrich Trendelenburg (1844-1925), GSV paper
Epidemiology

- 23% of adults
- 6% have advanced disease
- 11m(M) 22(F)
- >2m active ulcer
- Financial burden to patient and society
- ~1 billion US $
Varicose veins

- Thought to be cosmetic problem
- Affect emotional wellbeing
- Frequently cause of
  - Discomfort
  - Pain
  - Loss of working days
  - Disability
  - Low QOL
Varicose veins

• Evaluation greatly improved with duplex u/s

• Dramatic change in treatment due to endovenous therapy
  • EVLA
  • RFA
  • Sclerotherapy
Varicose vein diagnosis

- Clinical evaluation
- Duplex doppler
- Rarely
  - Venogram
  - CTV
  - MRV
  - IVUS
Varicose vein treatment

- Medical therapy
- Compression therapy
- Open venous surgery
  - High ligation, division and stripping
  - Ambulatory phlebectomy
  - Powered phlebectomy
- Sclerotherapy
- Endovenous thermal ablation
  - EVLA
  - RFA
  - Superheated steam
Medical therapy

- Venoactive drugs
  - Treat symptoms of varicose veins
  - Reduce oedema
  - Accelerate ulcer healing
- Mechanism of action unknown
  - Principle: improve venous tone and permeability
- Insufficient evidence to support its global use
Sclerotherapy

EVOLUTION AND DEVELOPMENT

• First attempt: Zollikofer in 1682 with acid as ‘sclerosant’

• 1940 – 1950: The procedure became accepted in Europe

• 1946: Sodium Tetradectyl sulphate (STS) developed – still used today

• Initially Liquid Sclerotherapy outcomes poor in larger vessels

• 1997: Development of Foam Sclerotherapy for larger vessels
Sclerotherapy

- **Indication:**
  - Residual vein after surgery
  - Telangiectases.
  - Isolated small dilated veins

- **Contraindication:**
  - Pregnancy
  - Sup thromboplebitis at the time of procedure
  - DVT
  - Previous hypersensitivity reaction to sclerosant
Sclerotherapy

• **Liquid sclerotherapy:** smaller (telangiectases, small reticular, venulectases)

• **Foam sclerotherapy:** larger veins
  – **Tessari-like technique**
Sclerotherapy

• **Advantage**
  
  • Cheap
  • Easy to learn
  • Truly an OPD procedure
  • Can be repeated many times
  • No anesthesia required

• **Disadvantage**
  
  • Not suitable for SFJ/SPJ obliteration
  • Thrombophagebitis
  • Pigmentation over skin
  • More than 3 wks compression is required
Endovenous thermal ablation

- Minimal invasive
- Done under U/S
- Requires local tumescent anaesthesia
- Done as outpatient in office
- Better early QOL
- Early return to normal activities
Endovenous thermal ablation

mechanism of action

- Causes direct thermal injury
  - Destruction of endothelium
  - Collagen denaturation of the media
  - Fibrotic and thrombotic occlusion
Endovenous thermal ablation

contraindications

• Inappropriate size
• History of thrombophlebitis
• Tortuous GSV
• Aneurysmal SFJ
• Relative contraindications
  • Uncorrectable coagulopathy
  • Liver dysfunction
  • Immobility
  • pregnancy
Technique
EVLA
Endovenous therapy outcome

Pre therapy

One week post therapy
Post procedural care

• Maintain compression

• Early ambulation

• Thrombosis prophylaxis
EVLA COMPLICATIONS

• Bruising: 75%
• Paresthesia: 3%
• DVT: 3%
• Thrombophlebitis: 1.87%
• Skin burns: 0.46%
• Thrombus extension: 2.3%

• Kabnick LS. Vascular 2006;14(suppl 1):S31-2.
## EVLA vs SURGERY
### 2 YEAR FOLLOW UP

<table>
<thead>
<tr>
<th></th>
<th>SURGERY</th>
<th>EVLA</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>No : Limbs</td>
<td>60</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>Clinical recurrent</td>
<td>7%</td>
<td>7%</td>
<td>0.44</td>
</tr>
<tr>
<td>Incompetent perforator</td>
<td>3%</td>
<td>1%</td>
<td>0.45</td>
</tr>
<tr>
<td>Recanalization GSV</td>
<td>2%</td>
<td>3%</td>
<td>0.23</td>
</tr>
<tr>
<td>Neovascularization</td>
<td>18%</td>
<td>1%</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Eur J Vasc Endovasc Surg (2009) 38, 203-207
RFA
Complications

• Paresthesia: 3.2%
• Thrombophlebitis: 0.8%
• Ecchymosis: 6.3%
• Skin pigmentation: 2%
• Thrombus extension: 2.6%

RFA reflux outcome

- **5 years**
  - 83.8% of GSV’s were free from reflux – first generation

- **3 years**
  - at 3 years ~ 95.7% free of reflux
  - at 3 years ~ 92.6% probability of occlusion

- No blood flow within the treated GSV was observed ~ 92.6%

Endovenous therapy

• Relief of symptoms

• Reduced hospital stay

• Most patients resume normal activities within 1-2 days

• Local anesthesia

• Good clinical outcome with minimal to no scarring, bruising or swelling
<table>
<thead>
<tr>
<th>Surgery</th>
<th>Sclerotherapy</th>
<th>Laser ablation</th>
<th>Radiofrequency ablation</th>
<th>Foam therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound infection, 3%-6%</td>
<td>Skin staining or necrosis, 3%</td>
<td>Purpura/bruising, 11%-23%</td>
<td>Saphenous nerve paresthesia, 13%</td>
<td>Contusion, bruising, hematoma, 61%</td>
</tr>
<tr>
<td>Sural or saphenous nerve injury, 10%-23%</td>
<td>Superficial phlebitis, 22%-27%</td>
<td>Erythema, 33%</td>
<td>Superficial phlebitis, 0%-20%</td>
<td>Skin pigmentation, 51%</td>
</tr>
<tr>
<td>Hematoma, 31%</td>
<td></td>
<td>Hyperpigmentation, 57%</td>
<td>Hematoma, 7%</td>
<td>Headache, 11%</td>
</tr>
<tr>
<td>Superficial phlebitis, 0%-12%</td>
<td></td>
<td>Hypopigmentation, 2%</td>
<td>Thermal skin injury, 7%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blistering/sloughing, 7%</td>
<td>Paresthesia, &lt;1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scaring, 13%</td>
<td>Leg edema, &lt;1%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Telangiectatic matting, 28%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Edema, 15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paresthesia, 1%-2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Superficial phlebitis, 6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
THANK YOU