Arm veins are a reliable and durable graft material in femoropopliteal and distal bypass surgery

Achim Neufang

Department of Vascular Medicine Helios Dr. Horst Schmidt Klinik Wiesbaden
Disclosure

Speaker name:

..........................................................................................

I have the following potential conflicts of interest to report:

☐ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

☐ I do not have any potential conflict of interest
Recommendation 40:
An adequate long (greater) saphenous vein is the optimal conduit in femoral below-knee popliteal and distal bypass [C]. In its absence, another good-quality vein should be used [C].

TASCII: TransAtlantic interSociety Consensus 2007

Rationale

➢ Recommendation 40:
An adequate long (greater) saphenous vein is the optimal conduit in femoral below-knee popliteal and distal bypass [C]. In its absence, another good-quality vein should be used [C].

TASCII: TransAtlantic interSociety Consensus 2007

➢ Indications for armvein
1. long saphenous vein not available or inadequate
2. only need for a short vein segment
3. construction of a spliced vein graft or composite graft

<table>
<thead>
<tr>
<th>Author</th>
<th>year</th>
<th>journal</th>
<th>n</th>
<th>patency %</th>
<th>Limb salvage %</th>
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</thead>
<tbody>
<tr>
<td>Campbell</td>
<td>1979</td>
<td>Ann Surg</td>
<td>18</td>
<td>49-68 (5 ys)</td>
<td>80%</td>
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<tr>
<td>Schulman</td>
<td>1982</td>
<td>Surgery</td>
<td>68</td>
<td></td>
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<tr>
<td>Graham</td>
<td>1982</td>
<td>Surgery</td>
<td>37</td>
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<tr>
<td>Harris</td>
<td>1984</td>
<td>Ann Surg</td>
<td>70</td>
<td></td>
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<td>Andros</td>
<td>1986</td>
<td>J Vasc Surg</td>
<td>160</td>
<td></td>
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<tr>
<td>Balshi</td>
<td>1989</td>
<td>Arch Surg</td>
<td>33</td>
<td></td>
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<tr>
<td>Harward</td>
<td>1992</td>
<td>J Vasc Surg</td>
<td>43</td>
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</table>
Historical results

Results of a policy with arm veins used as the first alternative to an unavailable ipsilateral greater saphenous vein for infrainguinal bypass

Thomas J. Hölzenbein, MD, Frank B. Pomposelli, Jr., MD, Arnold Miller, MD, Mauricio A. Contreras, MD, Gary W. Gibbons, MD, David R. Campbell, MD, Dorothy V. Freeman, MD, and Frank W. LoGerfo, MD, Boston, Mass.


The use of arm vein in lower-extremity revascularization: Results of 520 procedures performed in eight years

Peter L. Faries, MD, Subodh Arora, MD, Frank B. Pomposelli Jr, MD, Michele C. Pulling, BA, Paula Smakowski, MS, PT, Darren I. Rohan, MD, Gary W. Gibbons, MD, Cameron M. Akbari, MD, David R. Campbell, MD, and Frank W. LoGerfo, MD, Boston, Mass


<table>
<thead>
<tr>
<th>N=250</th>
<th>3 years</th>
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<tr>
<td>Patency</td>
<td>54</td>
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<tr>
<td>Limb salvage</td>
<td>80</td>
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</table>

<table>
<thead>
<tr>
<th>N=520</th>
<th>5 years</th>
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<tbody>
<tr>
<td>Patency</td>
<td>57</td>
</tr>
<tr>
<td>Limb salvage</td>
<td>71</td>
</tr>
</tbody>
</table>
anatomy

from: Andros G
Bypass grafts: the state of the art
Scan J Surg 2012; 101 100-106

from: Greenhalgh R,
Vascular and Endovascular surgical techniques WB Saunders 1994
Vein harvest
Vein harvest
Vein harvest
Vein splicing
Arm vein bypasses
Contemporary results


Arm vein conduit vs prosthetic graft in infrainguinal revascularization for critical leg ischemia

Eva Arvela, MD, Maria Söderström, MD, Anders Allbäck, MD, PhD, Pekka-Sakari Aho, MD, PhD, Maarit Venermo, MD, PhD, and Mauri Lepäntalo, MD, PhD, Helsinki, Finland

<table>
<thead>
<tr>
<th>Limb salvage 3 years</th>
<th>Type of conduit</th>
<th>%</th>
<th>p</th>
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<tbody>
<tr>
<td>Arm vein</td>
<td>75</td>
<td>.005</td>
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<tr>
<td>PTFE</td>
<td>57.1</td>
<td></td>
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</table>

<table>
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<tr>
<th>Survival 3 years</th>
<th>Type of conduit</th>
<th>%</th>
<th>p</th>
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<tbody>
<tr>
<td>Arm vein</td>
<td>58.8</td>
<td>.007</td>
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<tr>
<td>PTFE</td>
<td>39.5</td>
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</tbody>
</table>

P = .000

Infrapop. BP
Arm vein
PTFE

C

Cumulative secondary patency

Grafts at risk

103 53 47 37 23 29 28 42 14 8 4 3 1 1

Time (months)

Contemporary results

Intrainguinal Bypass for Peripheral Arterial Occlusive Disease: When Arms Save Legs


Department of Thoracic and Vascular Surgery, Lausanne University Hospital, Rue du Bugnon 21, 1011 Lausanne, Switzerland
Institute of Social and Preventive Medicine, Lausanne University Hospital, Lausanne, Switzerland
Department of Vascular Medicine, Lausanne University Hospital, Lausanne, Switzerland

Limb salvage 3 y 88%

Vauclair et al. Eur J Vasc Endovasc Surg 2012;43:48-53
Contemporary results

Spliced Arm Vein Grafts Are a Durable Conduit for Lower Extremity Bypass


Concept of all autogenous reconstruction

<table>
<thead>
<tr>
<th>Vein use</th>
<th>%</th>
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<tbody>
<tr>
<td>Vein</td>
<td>87</td>
</tr>
<tr>
<td>Spliced vein</td>
<td>38</td>
</tr>
<tr>
<td>Greater saphenous vein</td>
<td>80</td>
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<tr>
<td>Armvein</td>
<td>30</td>
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<tr>
<td>Lesser saphenous vein</td>
<td>2.5</td>
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<tr>
<td>other vein</td>
<td>1</td>
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## Personal experience (284 bypasses; 2010-2016)

<table>
<thead>
<tr>
<th></th>
<th>Primary assisted patency</th>
<th>Secondary patency</th>
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</thead>
<tbody>
<tr>
<td>Vein</td>
<td>78%</td>
<td>68%</td>
</tr>
<tr>
<td>Composite</td>
<td>22%</td>
<td>42%</td>
</tr>
</tbody>
</table>

### Diagrams

**Primary assisted patency**

- Vein: 78%
- Composite: 22%

**Secondary patency**

- Vein: 73%
- Composite: 45%
Personal experience (284 bypasses; 2010-2016)

Limb salvage
All bypasses with arm vein

Material

Vein 78%
Composite 22%

MAC Armvein
Use of arm veins enables autologous reconstruction especially in combination with other veins with good patency and limb salvage

Patency and limb salvage of composite bypasses acceptable

Duplexsonographic surveillance and secondary interventions improve patency

Routine use of arm veins – central part of peripheral surgical revascularisation for limb ischemia