TIPS AND TRICKS: Percutaneous access

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Disclosures

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I have the following potential conflicts of interest to report:

- [✓] Consulting: Abbott, Cook, Cordis, Medtronic, WL Gore & Associates
- [ ] Employment in industry
- [ ] Stockholder of a healthcare company
- [ ] Owner of a healthcare company
- [ ] Other(s)
- [ ] I do not have any potential conflict of interest
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EVAR and percutaneous access: an ideal combination

- Rapid, safe and effective
- Local anesthesia
- Lower risk of wound-related complications (e.g., seroma, infection, nerve injury)
- Reduced discomfort for the patient
- Early ambulation, shorter hospitalization

*Totally endovascular, minimally invasive procedure*
Suture mediated closure devices:
Prostar XL & Proglide
Perclose ProGlide
Suture-Mediated Closure System

■ Simple
  - Pre-tied knot
  - Numbered deployment sequence
  - Single operator procedure with QuickCut mechanism
  - 5-21F

■ Secure
  - Secure close with a polypropylene monofilament suture
  - Minimized inflammatory response
  - The closure can be challenged and confirmed on the table
  - No reaccess restrictions if previous arteriotomy repairs were achieved with Perclose ProGlide

■ Control
  - Ability to maintain wire access
Device Components
Perclose ProGlide
The security of suture

1. Foot deployment

2. Needles deployment

3. Connection of suture with pre-tied knot

4. Suture brings the tissues together to promote primary healing
Heat-Formed Knot

Heat forming process creates permanent shape of knot in suture
Learning curve in percutaneous access:
a multifactorial strategy
1. Preoperative evaluation
2. Ultrasound guided puncture
What do I need for pEVAR?

Effect of Preinterventional Ultrasound Examination on Frequency of Procedure-Related Vascular Complications in Percutaneous Coronary Interventions With Transfemoral Approach

Emilia Stegemann, MDa,b, Berthold Stegemann, PhDc, Nikolaus Marx, MDb, Thomas Lauer, MDb, and Rainer Hoffmann, MDa

Vascular complications are the most frequent adverse events associated with percutaneous coronary interventions (PCIs) leading to an increase in morbidity and mortality. Puncture of the common femoral artery in its middle segment is proved to decrease the risk of procedure-related vascular complications. Real-time ultrasound-guided puncture of the vessel is effective to decrease access site-related vascular complications but complex to perform. We evaluated whether an ultrasonic preinterventional examination of the femoral puncture site and skin marking of anatomic structures and specific vascular characteristics results in a decrease of access site-related vascular complications in PCIs with transfemoral access. Over a period of 12 months we prospectively examined all puncture sites before elective PCIs with transfemoral access (n = 848) using ultrasound. Presence, extent, and location of plaques and stenoses and exact location of bifurcation of the femoral artery were marked by a sonographer on the skin to guide the interventionists in vascular puncture. Postinterventional access site ultrasound was performed to determine possible access site-related complications. Frequency of vascular access site complications was compared to a control cohort (n = 1,027) that did not undergo ultrasound examination before intervention. With ultrasonic vascular access site examination the rate of access site-related vascular complications was decreased from 4.2% to 1.9% (odds ratio 0.44, 0.23 to 0.80, p = 0.005). In conclusion, preinterventional ultrasonic access site examination and skin marking decreases the risk of vascular complications in elective PCI with femoral access. © 2011 Elsevier Inc. All rights reserved. (Am J Cardiol 2011;108:1203–1206)
Arterial puncture at 45°
Use preferably an angled .035” starter guidewire
Control Progression under US / X-ray
Pre-closing: first insert 7fr introducer sheath
Skin incision (Stent-Graft OD)
3. Double Proglide technique

Approved for large bore sheath up to 21 Fr
4. Progressive closure
5. Post-closure duplex and CT follow-up access sites examination
The Prostar XL is an effective and safe device for use in percutaneous closure of large femoral artery sites, comparable to open surgical femoral artery cut-down.

Haulon S et al., Eur J Vasc Endovasc Surg 2011
Outcomes of total percutaneous endovascular aortic repair for thoracic, fenestrated, and branched endografts

2009-2014: 102 pts; total percutaneous closure was performed using two Perclose devices in 170 femoral arteries with ≥20F-diameter sheaths in 163 (96%)

- **Technical success: 95%**
- **3 thrombosis, 1 retrop hematoma, 1 pseudoaneurysm**
- **No access-related complications >30 days**

<table>
<thead>
<tr>
<th>Variable</th>
<th>No. (%)</th>
</tr>
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<tbody>
<tr>
<td>Type of repair</td>
<td></td>
</tr>
<tr>
<td>Pararenal</td>
<td>48 (47)</td>
</tr>
<tr>
<td>Thoracoabdominal</td>
<td>27 (26)</td>
</tr>
<tr>
<td>Thoracic</td>
<td>19 (19)</td>
</tr>
<tr>
<td>Aortoiliac</td>
<td>8 (8)</td>
</tr>
<tr>
<td>Sheath size (by artery)</td>
<td></td>
</tr>
<tr>
<td>&lt;20F</td>
<td>7 (4)</td>
</tr>
<tr>
<td>≥20F</td>
<td>163 (96)</td>
</tr>
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The rate of access related complications (5%) is similar to that reported for PEVAR of infrarenal AAAs using smaller-profile devices.

*De Souza LR et al., J Vasc Surg 2015*
Italian Percutaneous EVAR (IPER) Registry: outcomes of 2381 percutaneous femoral access sites’ closure for aortic stent-graft

G. PRATESI 1, M. BARBANTE 1, R. PULLI 2, A. FARGION 2, W. DORIGO 2 R. BISCEGLIE 1, A. IPPOLITI 1, C. PRATESI 2 on behalf of IPER Registry Collaborators

<table>
<thead>
<tr>
<th></th>
<th>TEVAR/f-bEVAR (192/2381)</th>
<th>EVAR (2189/2381)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr device (mean ± SD)</td>
<td>21.3 ± 2.1</td>
<td>16.7 ± 3.4</td>
<td>.03</td>
</tr>
<tr>
<td>Profile &gt; 20 Fr</td>
<td>54 (43.5%)</td>
<td>482 (21.3%)</td>
<td>.001</td>
</tr>
<tr>
<td>CFA diameter, mm (mean ± SD)</td>
<td>8.4 ± 1.7</td>
<td>8.2 ± 1.4</td>
<td>.15</td>
</tr>
<tr>
<td>CFA &lt; 7 mm</td>
<td>9 (7.2%)</td>
<td>163 (7.2%)</td>
<td>.54</td>
</tr>
<tr>
<td>High CFA bifurcation</td>
<td>2 (1.6%)</td>
<td>64 (2.8%)</td>
<td>.32</td>
</tr>
<tr>
<td>CFA stenosis &gt;50%</td>
<td>6 (4.8%)</td>
<td>66 (2.9%)</td>
<td>.16</td>
</tr>
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J Cardiovasc Surg 2015
pEVAR tips & tricks:
one Proglide up to 14F femoral access
pEVAR tips & tricks: sheath downsizing during complex f/bEVAR
pEVAR: tips & tricks
pledgets with minor bleeding
pEVAR: tips & tricks
third Proglide if you are not satisfied
pEVAR: tips & tricks
endoclamping in case of failure
Expanding pEVAR applicability: obese patient
Expanding pEVAR applicability: calcified common femoral arteries
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Thank you!