Vascular Access: What Do I Need to Know?

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What you need to know about:

Device Placement

Dealing with Occlusion

Options when Access is Limited
What Do I Need to Know?

Know your body
- Status of target veins
- Presence of other devices
- Access history

Be honest about your preferences & capabilities
- What works for your life
- What you can, and can’t cope with
Device performance and complications are directly related to optimal catheter tip position, particularly in the long term.
<table>
<thead>
<tr>
<th>Standard</th>
<th>INS, 2011 Standards of Practice</th>
<th>SVC near its junction with RA</th>
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</thead>
<tbody>
<tr>
<td>Guideline</td>
<td>ONS, 2011 Access Device Guidelines</td>
<td>Distal third of SVC</td>
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<td>Guideline</td>
<td>NKF, 2006 Dialysis Quality Initiative Guidelines</td>
<td>SVC or RA</td>
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<tr>
<td>Guideline</td>
<td>SIR, 2010 Quality Improvement Guidelines for CVCs</td>
<td>Cavoatrial region or RA. Two vertebral bodies below carina</td>
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<tr>
<td>Statement</td>
<td>AVA, 1998 Position Statement</td>
<td>Distal SVC close to CAJ</td>
</tr>
<tr>
<td>Guideline</td>
<td>ASPEN, 2004 Safe Practices for PN</td>
<td>Lower SVC adjacent to RA</td>
</tr>
</tbody>
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VAD Tip Confirmation

- Chest x-ray
- Fluoroscopy
- ECG Tip Location (PICCs)
Radiographic Anatomy of Tip Position

- Tracheobronchial Tree
- Origin of SVC
- Right Tracheobronchial Tree Angle (Locator)
- Superior Vena Cava (SVC)
- Junction of the SVC/RA

1.5 cm
3 cm
4.5 cm
Anatomy of Central Veins

- SVC
- Left brachiocephalic vein
- Left subclavian vein
- Right atrium
- Pulmonary artery
Atriocaval Junction: A Different Approach
VAD placed via azygos vein
VAD Placed via Hemiazygos
What Should I Do When my VAD Doesn’t Work?
Withdrawal Occlusion: Assessment

Ask these questions

What type of device is it?
Where’s the tip?
What is its performance history?
What was its most recent use?
Do you have any discomfort with use?
Withdrawal Occlusion: Assessment

Check all connections, pumps, etc

Take dressing off… investigate

Check Huber needle position

Flush with NS, attempt to aspirate
Withdrawal Occlusion: Treatment

Instill CathFlo (alteplase)

2mg in patients > 30kg
110% of VAD volume in patients <30kg

Dwell up to 2 hrs
Repeat x 1 if needed

~85% efficacy in opening occluded VADs in 1100 pts with 2 doses (~75% with single dose)

J Clin Onc 2002; 20: 317-324
Withdrawal Occlusion: Assessment

Do I need a chest x-ray?

Yes, if:

Catheter function not restored with lytics or other solvent

You have pain with device use
Withdrawal Occlusion: Assessment

Do I need a dye study?

VAD tip is accurate, device appears intact &:

VAD performance remains sub-optimal after lytics

You have pain with use

Physical exam suggestive of obstruction
Extensive Pericatheter Thrombosis
Extensive Fibrin Sheath
Residual Fibrin Sheaths
VAD Related Thrombosis/Fibrin Sheath: Treatment

tPA infusion

2-2.5mg/lumen/hr x 2 hours

12-24 hr infusion

Balloon angioplasty

? Catheter stripping
Fibrin Sheath Stripping
VAD Related Stenosis
VAD Related Stenosis: Treatment

Angioplasty

Stent
Radiofrequency Wires

The PowerWire®
Baylis Medical
What about using standard devices in different ways?
We really can put the exit site anywhere!
Can a tunneled VAD go in the arm?
How about the leg?
Select clinicians who:

- Collaborate with you
- Discuss options & strategy
- Support your maintenance needs
- Followup & manage problems