Module #5:

AV Grafts (AVGs)

- AV Graft Insertion
- AV Graft Complications
- AV Graft Monitoring

AV Graft Insertion: Case Study

Returning to the case…..

- A referral was sent to the VA clinic.
- Physical examination demonstrated very few options for access creation.
- Mr. Kline was sent for vessel mapping & bilateral venograms.
- It was decided to insert a graft in his right forearm with the hopes of an upper arm cephalic vein developing in the future.

AV Graft Insertion

Source: http://www.dialysistips.com

Source: http://www.goremedical.com/images/center/vascular_access.jpg

AV Graft Insertion

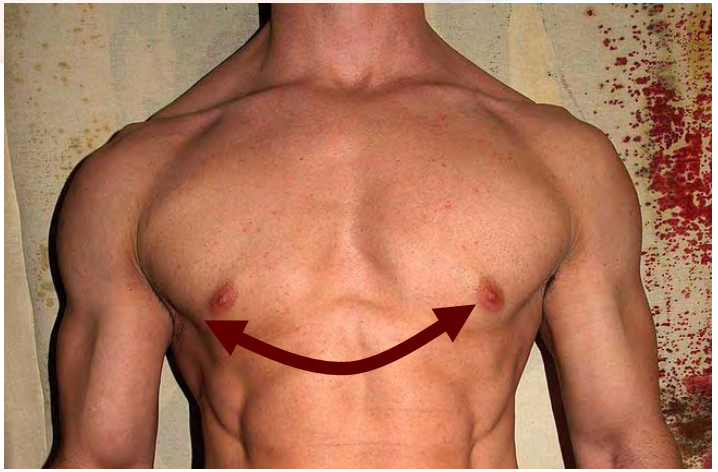
What are your observations about this graft?

- **Large area of un-needled territory – why?**
  - **Area was too deep to establish a needle.**
- **Many small collateral vessels visible – why?**
  - **Body's way of re-establishing circulation which has been disrupted.**

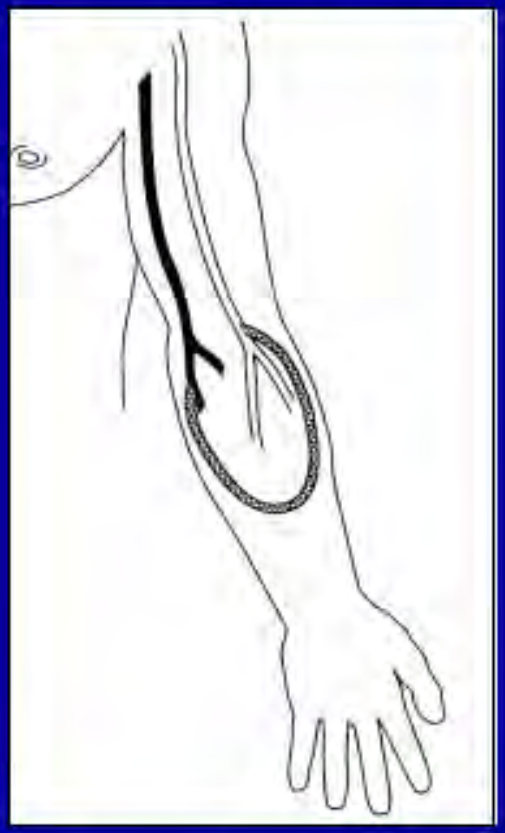
AV Graft Insertion

AV graft placement sites:

- Forearm (preferred)
- Upper arm
- Thigh
- Axillo/femoral bypass
- Axillo/axillo bypass (necklace graft)



Configuration of Upper Extremity AV Grafts

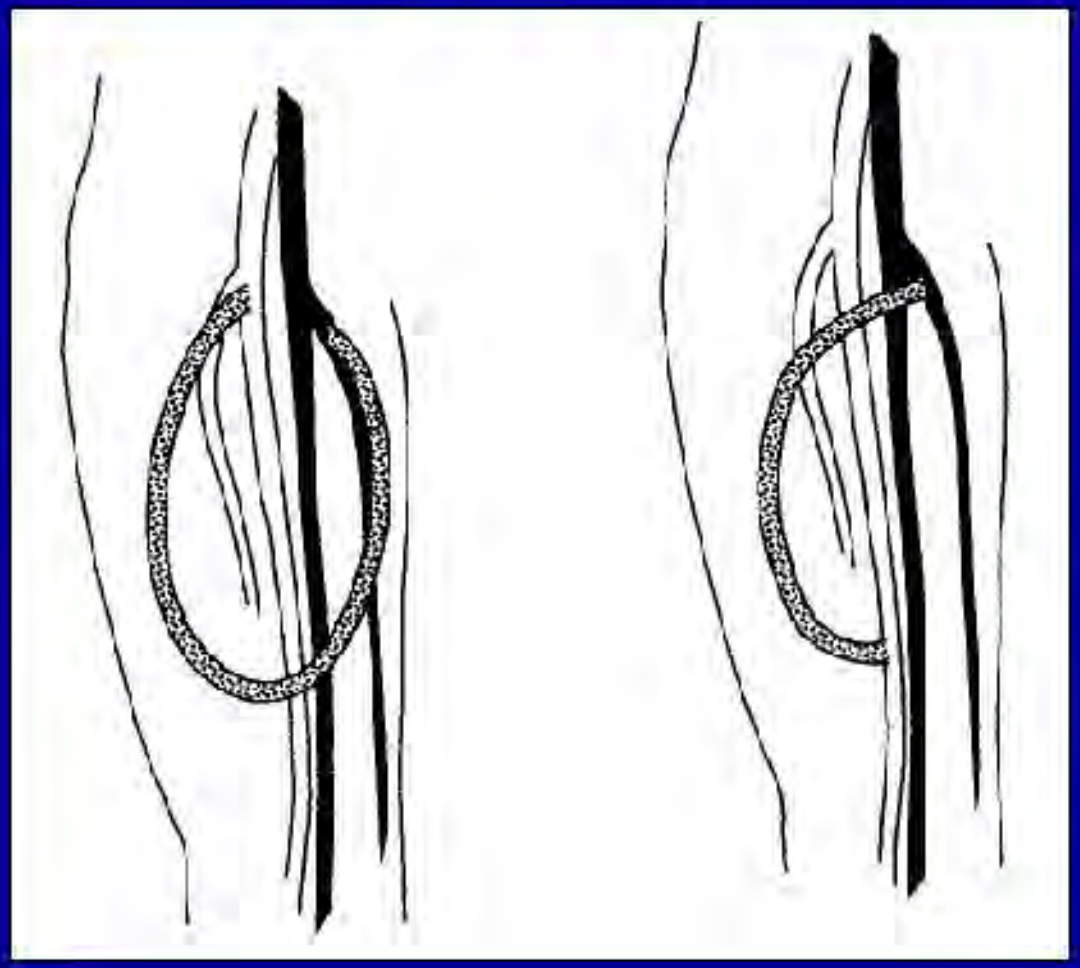


Loop Forearm

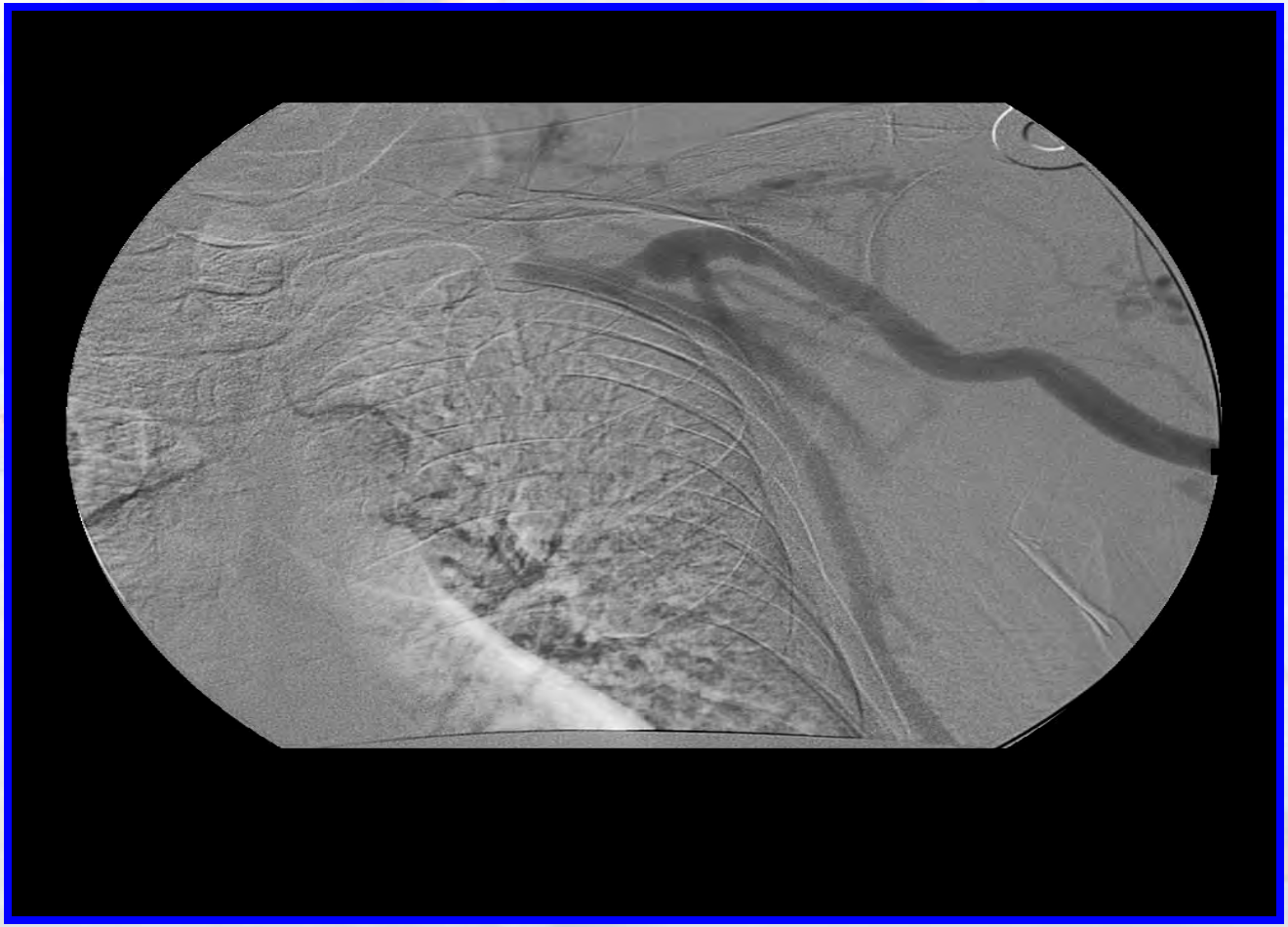
Straight Forearm

Brachioaxillary

Thigh AV Grafts



AV Graft Insertion:
Bypass Graft - Brachioaxillary

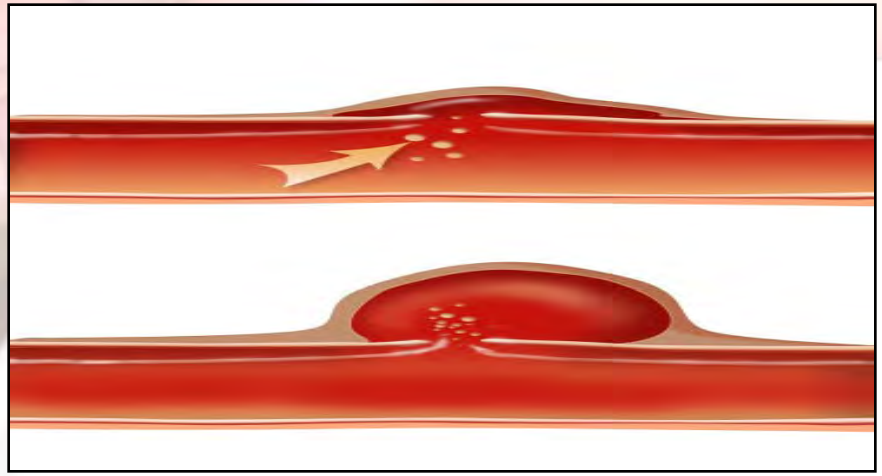


AVG Complications

- Infection (reviewed earlier)
- Stenosis (reviewed earlier)
- Pseudoaneurysm
- Degradation (destruction of graft material)
- Ischemic monomelic neuropathy

AVG Complication: What happened?

AVG Complication: Pseudoaneurysm



- Rare complication of AVGs.
- Rupture and life threatening hemorrhage are the most common and dangerous consequences of a pseudoaneurysm.

Source: The Internet Journal of Thoracic & Cardiovascular Surgery TM ISSN: 1524-0274

AVG Complication: Degradation

- Long time in situ & many, many needles in the same area caused this graft to fail.
- One site-itis is hard to avoid in an old graft.
- Eventually graft material whittles away & the fibrotic tunnel of connective tissue becomes the shunt.

AVG Complication: Ischemic Monomelic Neuropathy

- **Sudden diversion of blood supply to the nerves of the forearm & hand.**
  - **severe enough to injure nerve fibres but not severe enough to produce necrosis.**
- **Condition is painful.**
  - **Analgesics are not usually very effective.**
- **Graft must be removed.**

AVF & AVG Monitoring

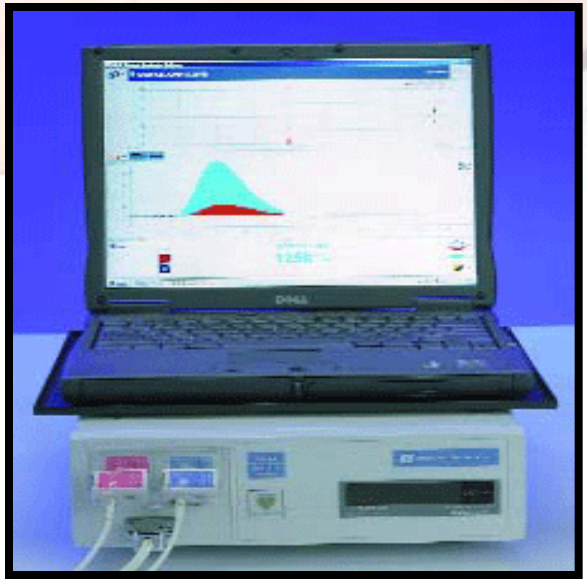
Even if an OR report describes the arterial & venous connection, the nurse should confirm access flow with one of the following tests:

1. **Block apex (referred to in literature)**
   - **Listen with a stethoscope.**
   - **Venous segment should get louder.**
2. **Bubble test (used at St Paul's)**
   - **Insert needles into graft. Attach male/male adapter.**
   - **Open clamps.**
   - **Bubble will travel to venous end.**

AVG & AVG Monitoring

When should access flows be investigated?

- A drop of ≥20%
- If drop is ≥50%, investigations should be within 48 hours



Normal

- AVF ≥ 500 ml/min
- AVG ≥ 650 ml/min

Investigation

- Fistulogram +/- angioplasty

THE END

Mr. Kline experienced the full gamut of vascular accesses. He's had education & coaching to help him adjust to every new event involved in his journey. He weathered many complications & challenges common to vascular accesses.

We hope Mr. Kline was eventually back to an AVF since a FISTULA is always the best choice.

This concludes our Vascular Access Workshop presentation. We hope it has been useful for you.

We welcome all suggestions for further editions. Contact Rick Luscombe or Laurie Bates.

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