Access Opportunities in Apheresis

Victoria Chapman
BS, RN, HP (ASCP)
Find your “Happy” Place
Evaluation of the Patient–Age
Mental Status/Anxiety Level
Cognitive Ability
Peripheral Vasculature

- Considerations:
  - Age
  - Sex
  - Body Composition
  - Hydration Status
  - Chemotherapy Use
  - “Access” History
Immune Status

Considerations:

- Immunosuppression Use
- Chemotherapy
- Frequency of plasma exchanges
- Conditions lessening immune “ability”
- Inpatient treatment versus outpatient treatment
Treatment/Collection Purpose

Considerations

- Number of Treatments/Collections
- Length of Treatment/Collection
- Life long treatment needs versus acute
- Dual needs of access
- Risks of placing central venous access
- Patient’s capacity for access
Apheresis Instrumentation
Blood flow rates MUST be > 100 mLs/minute

Access Choices:
- Central Venous Access
- Graft
- Fistula
- HeRO Graft
Apheresis by Centrifuge

- Blood flow rates determined by citrate infusion rate

- Access Choices:
  - Peripheral Veins/Artery for draw site
  - Central Venous Access
  - Implanted Port(s)
  - Graft
  - Fistula
  - HeRo Graft
Photopheresis

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Timing of Treatment

Considerations:

- Emergent versus Non-emergent
- Interventional Radiology Coverage
- Outpatient versus Inpatient access care coverage
Peripheral Veins

- Can be used for one arm or two arm procedures
- Large bore (17 gauge) arterial venous fistula needle(s) placed typically in large anticubital vein(s) used for draw and return line
- Jelcos/Angiocaths (18 gauge) soft catheter over a steel needle, can be used for return line in two arm procedures
Advantages of Peripheral Veins

- Needles easily and quickly placed by apheresis provider
- Less risk of infection, hemorrhage and thrombosis associated with central venous catheters
- Needles removed at conclusion of procedure
- Best used for short term procedures

Hints: Warmth and hydration
Disadvantages of Peripheral Veins

- Not all patients have adequate vessels to successfully complete apheresis procedures
- Difficult in maintaining peripheral access with repeated use
- Discomfort during venipuncture and procedure with immobilization of area of needle placement
- Venipuncture skill differences in team of apheresis providers
Arterial Venipunctures

- Arterial venipuncture for draw line
- Dr. Khatri, neurologist in Milwaukee, WI
Advantages of Arterial Venipunctures

- Less risk of infection, hemorrhage and thrombosis associated with central venous catheters
- Needles removed at conclusion of procedure
Disadvantages of Arterial Venipunctures

- Access must be placed by physician
- Expenses related to access placement
- Discomfort during venipuncture and procedure with immobilization in area of needle placement
- Venipuncture skill differences in team of physicians
Implanted Ports

- Surgically implanted, self-sealing IV device connected via a catheter to the blood vessels
- Typically used for long-term venous access for infusions, blood draws, and medications
- Can be single or dual or 2 single ports placed in different areas, typically in patient’s chest
Advantages of Implanted Ports

- More permanent option for continual access
- Port less visible, no external lines for body image concerns
- Needles easily and quickly placed by apheresis provider
- Needles removed at conclusion of procedure
Disadvantages of Implanted Ports

- Patient’s body size and tissue must be sufficient to accommodate the size of the port
- Risks similar to those of any implanted device—infected, pneumothorax, catheter malposition, hematoma, hemorrhage, clotting—fibrin sheath, cardiac arrhythmia, skin/vessel erosion, medication extravasations
- Discomfort with needle placement
- Increase in needle gauge size for increased blood flow rates = “off label”
Central Venous Catheters

- Can be tunneled or non-tunneled
- One time or long term placement
- May be placed bed side or in interventional radiology/surgery
- Double or triple lumen
- Placement locations:
  - Femoral
  - Internal Jugular
  - Subclavian
Advantages of Central Venous Catheters

- Use is allowed immediately after placement
- Typically good blood flow rates
- One time venipuncture
- Increased mobility during apheresis procedure with subclavian and jugular placement
Disadvantages of Central Venous Catheters

- Dependency on physician/interventional radiology for placement of catheter
- Discomfort with catheter placement
- Short term solution
- Access more visible, more prohibitive for patient
- INFECTION, INFECTION, INFECTION
- Risks similar to those of any implanted device
Eliminates open catheter hubs by attaching lines directly to the Tego after disinfecting connectors, protecting the catheter from contamination

- Flow rates up to 600 mL/minute
- No Heparin Lock needed after use
AV Fistulas

- Surgical connection between an artery and vein for creation of both a draw and return access
- Most frequently used for dialysis treatments
- Placement is typically in wrist, upper arm or very rarely in upper leg
Advantages of Fistulas

- Long term access, patient’s own vessels
- Less risk of infection compared to central venous access
- Less risk of clotting compared to grafts
- Needles removed at conclusion of procedure
Disadvantages of AV Fistulas

- Dependency on surgeon for creation of fistula, not useable for 6–8 weeks
- AV fistula maturity Rule of “6s”
  - 6–8 weeks post surgery
  - Depth below skin < 0.6 cm
  - Diameter > 0.6 cm
- Discomfort during venipuncture and procedure with immobilization in area of needle placement
- STEAL Syndrome
- Body image concerns
New Access: Rule of 6s

Diameter greater than 0.6 cm

No deeper than 0.6 cm
Grafts

- Surgical connection of an artery, vein using synthetic material or live tissue for creation of both a draw and return access
- Tunneled under the skin
- Most frequently used for dialysis treatments in patients not having suitable veins for an AV fistula
- Placement is typically in upper or lower arm, can be placed in thigh
- May be looped or straight
Advantages of Grafts

- Long term access, ready for use in 2–3 weeks
- Less risk of infection compared to central venous access
- Needles removed at conclusion of procedure
Disadvantages of Grafts

- Dependency on surgeon for creation of graft, not useable for 2–3 weeks
- Discomfort during venipuncture and procedure with immobilization in area of needle placement
- Compared to AV fistula increased incidences of clotting
- Bleeding post treatment
- STEAL Syndrome
Tunneled Dialysis Catheter–HeRO Graft

- Used in patients where suitable sites for graft or AV fistula have been exhausted
- The device consists of a surgically created access with a combination of a graft and catheter bypassing obstructions
- Can be placed in the left or right upper extremity
Advantages of Tunneled Dialysis Catheters

- Access of last resort when all other options for grafts and fistulas have been exhausted
- No external lines for body image concerns
Disadvantages of Tunneled Dialysis Catheters

- Increased risk of infections
- Reduced blood flow rates causing less effective dialysis
- Frequent malfunctions
- Development of central venous stenosis
HeRO AV Graft

- Internal Jugular Incision
- HeRO Outflow Component
- Titanium Connector
- Graft Rings
- Connector Incision
- HeRO Graft Component (e-PTFE)
- Brachial Incision
Training

- Skills validation
- Right person for the right “job”
- Attitude
You can do it!!!
References

- National Kidney and Urologic Diseases Information Clearinghouse, NIH Publication Number 08–4554, February 2008
- DaVita Lifelines