

Best Access Procedures from the Dialysis Units' Viewpoint

Lesley C. Dinwiddie MSN, RN, FNP, CNN

University of North Carolina

Objectives

The participant will be able to:

1. Compare and contrast the benefits (and deficits) of each dialysis access type
2. List the attributes of dialysis access that facilitate cannulation

University of North Carolina

The Goal of Dialysis

- Enables you to "do what you want to do with the rest of your life" (?rehabilitation)
- Basic requirement for this tall order is physiological adequacy of RRT
- Adequacy of hemodialysis is a minimum URR of 65% (preferably > 70%)
- Basic requirement of adequacy is blood flow to and through the dialyzer

University of North Carolina

Access = Adequacy = Access

- adequacy is $URR > 65\%$ (pre-post/pre x 100)
 - » and is the product of
 - time on dialysis
 - size (clearance) of the dialyzer and needles
 - Q_b - blood flow
- blood flow in the access result of
 - » cardiac output (stroke vol x heart rate)
 - » blood pressure
 - » size and integrity of access

University of North Carolina

Outline

- today's vascular access challenges
- the ideal vascular access
- compare and contrast the benefits of
 - » catheters; AV fistulae; PTFE grafts; ports
- the attributes of the surgical access that facilitate cannulation

University of North Carolina

Today's Challenges in Vascular Access

- leading cause of hospitalization in the ESRD population (Feldman et al., 1993)
- annual cost approaching \$1 billion (Feldman et al., 1996)
- aging population with diabetes as the leading cause of ESRD
- our patients need an access that works better and lasts longer
- WITH LESS PAIN AND SUFFERING!!!

University of North Carolina

Today's Challenges in Vascular Access

- cannulation
 - » increased # of fistulae
 - » marginal outflow veins
 - » variability of staff experience
 - » limited area for cannulation
- monitoring
 - » needs to be effective
 - » affordable
 - » user friendly

University of North Carolina

The Ideal Vascular Access

- requires minimal surgical intervention
- causes minimal physical or psychological dysfunction
- is consistently adequate
- is amenable to reliable, routine monitoring
- receives consistent, effective cannulation
- requires, average maintenance intervention

University of North Carolina

Pros and Cons of Access Types

- Catheters:
 - pro - no cannulation
 - con - high risk of bacteremia
 - less flow volume (through dialyzer ml/min)
 - high potential for central vessel occlusion
 - cannot shower/swim

University of North Carolina

Pros and Cons of Access Types

- Fistulae
 - pro - minor surgery c little dysfunction attributable
 - very low risk of infection
 - longest average patency of all access types
 - seals and heals post cannulation
 - con - high initial failure rate
 - flows initially not better than catheter
 - initially difficult to cannulate
 - difficult to declot

University of North Carolina

Pros and Cons of Access Types

- PTFE grafts
 - pro - moderately low risk of infection
 - can be used in 3-4 weeks
 - low initial failure rate
 - flows reliably high
 - can be declotted
 - initially easier to cannulate & monitor
 - con - more traumatic surgery c edema/pain
 - life patency mean 18mths-2yrs

University of North Carolina

The Reality of Vascular Access

- There is no single access that meets even most of the ideal criteria
- Surgically created accesses, fistulae and PTFE grafts, do however yield more reliable flows for adequacy with much less risk of bacteremia
- DOQI guidelines make fistulae the access of choice

University of North Carolina

Meeting the Challenges

- NKF-DOQI *guidelines* - the result of expert opinion and literature evidence
- Clinical Standards of Practice
 - Experience and commitment of the interdisciplinary team collaborating for **each individual patient**

University of North Carolina

Attributes to facilitate cannulation

- Placed or transposed in an accessible body part
- Superficiality of graft or vein - easily palpated and visualized
- tunneled in an even plane
- tunneled with gradual curves
- should provide reasonable amount of accessible surface area to allow rotation of needle sites

University of North Carolina

Collaborative Care of Vascular Access

- Nurses have a pivotal role that involves coordination and continuity of care through:
 - » early detection of complications
 - » risk assessment
 - » timely referrals
 - » appropriate referrals
 - » post procedure follow-up

University of North Carolina

Collaborative Care of Vascular Access

- Nurses have a pivotal role as vascular access advocates through:
 - » assertive preservation of existing access
 - patient & staff education
 - interaction with radiologists and surgeons
 - promoting expert cannulation & self-cannulation
 - » persistent preservation of remaining access sites
 - minimizing central catheter access
 - minimizing venous cannulation in "virgin" limbs

University of North Carolina

Who is the Cannulator?

- Will just anyone do?
- Would you let that person stick you or yours?
- What training should you look for?
- Is there a role for dedicated cannulators?
- Has the time for self-cannulation arrived?

University of North Carolina

Lesley's sticking tips

- carefully inspect, feel, and listen to access
- thoughtfully choose BOTH needle sites before sticking - take your time
 - » which side/end is arterial?
 - » where was the previous stick?
 - » is there room above to stick again should it blow?
 - » where will the tip of the needle be?
 - » how deep is the graft?
 - » ? needs local - lidocaine versus Emla cream

University of North Carolina

Lesley's sticking tips cont.

- Remember
 - » needles don't bend - accesses do
 - » rotate sites
 - » take your time
 - » listen to your patient - he's seen the best and the worst and knows his access best
 - » flip needles ONLY if flow is poor
 - » tape needles securely not tightly

University of North Carolina

Lesley's sticking tips cont.

- Remember
 - » take your time
 - » fistulas and grafts are of different composition
 - » ALWAYS use a tourniquet for a fistula
 - » use a tourniquet for a "mushy" graft
 - » fistulas not as tough as PTFE - be gentle!
 - » if at first you don't succeed - get expert help
 - » stick unto others as you would have them stick you

University of North Carolina

Care of the edematous graft

- is it reactive cellulitis or infection?
- elevating the arm and encouraging use of the hand
- when to cannulate
- how to cannulate

University of North Carolina

The Marginal Outflow Vein

- Use a single needle to return blood initially
- Aggressively treat infiltrations
- Conservatively recannulate
- Get ultrasound mapping for depth and size
- Get fistulagram if generalized swelling occurs
- Refer back to surgeon for revision options

University of North Carolina

Collaborative Care of Vascular Access

- Surgeons have a role as vascular access advocates through:
 - » diagramming new accesses & labelling arterial limb
 - » communicating specific access orders directly to the nurses
 - » visiting the dialysis units to do patient & staff education and to familiarize staff c surgeon's point of view
 - » be readily accessible for consultation

University of North Carolina

The End

University of North Carolina