Autologous AVF Algorithm

Patient requiring chronic renal replacement therapy (RRT)/ possible Hemodialysis

AVF assessment / surgical consult--ideally prior to stage 4 CKD (GFR<30):
- History
- Physical exam
- Vessel mapping if suitable AVF vessels not identified on P.E. (see "mapping protocol")

Suitable vessels for AVF on P.E. or mapping?

NO → AVG or Tunneled Cuffed Cath or PD

YES

AVF Construction:

1. Forearm options
   - Distal: radio-cephalic, transposed radio-basilic
   - Proximal:
     . radio-(or brachio-)cephalic (straight or transposed loop)
     . radio-(or brachio-)basilic (transposed loop)
   - Antecubital: Gracz, other
2. Arm options
   - brachio-cephalic (simple or transposed)
   - brachio-basilic (transposed only/1- or 2-stage)
3. Thigh
   - femoro-saphenous (transposed), other
4. Other
   - Translocations (saphenous v. to forearm, other)
   - Retrograde constructions (arterial anastomosis proximal / AVF flow retrograde)
   - Composite / creative constructions
   - "Blind" constructions (planned 2-stage procedure where no definable vein conduit identified at 1st stage)

Mandatory 4-week post-op assessment

Is AVF maturing adequately?

NO → **Doppler study or fistulogram/remedial action as indicated**

YES

Attempt Cannulation @ 8-12 wks based on exam & MD orders

Proceed to Part 2:
"Assessment of new AVF/ Management of early failure "

ALERT: ***Only experienced AVF cannulators perform initial cannulations***

Notes to Algorithm

Ideally, regardless of whether HD or PD contemplated, patient would be referred for autologous AVF unless patient not considered a candidate for HD or AVF based on medical/other reasons.

- History: diabetes, catheters, PICC lines, pacemaker, PVD, extremity swelling, surgery, trauma,…
- P.E.: Artery: pulses, BP, status of periph. circ./Allen test
  Vein(with tourniquet): soft, straight, superficial,>2.5mm
- Mapping: Artery: >2.0mm I.D.,no calcifics./stenosis, normal flow & velocity wave forms.
  Vein:(exam with & w/o tourniquet)> 2.5mm I.D. with tourniquet, compliant, distensible>50%, continuity with deep system, no stenosis/webs, no C.V. stenosis.

Note: majority of patients are candidates for 1º and 2º AVF if mapping performed.

- AVF selection based on upper extremity with best vessels / distal-to-proximal

- If upper extremity AVF not feasible, AVG reasonable option (with plan for future 2º AVF conversion evaluation) before considering lower extremity AVF (due to higher complication rate and limb threat related to latter)

Note: special attention given to limiting size of arterial anastomosis (<5mm) in pts. at high risk (esp. diabetics) of developing significant ischemia/steal.

- Category 4 procedures reserved for patients with limited options or exhausted sites.

Most failing AVF's can be identified on physical exam alone by 4 wks.
Note: Also assess for ischemia/steal

Most early AVF failures can be salvaged if identified before thrombosis occurs.

Some AVF's, esp. transposed, may take considerably longer to mature.

Note: If AVF looks good but infiltrates, rest AVF x 2 wks.—if persists, rest another 2-4 wks.—if persists, re-exam and fistulogram p.r.n.--with remedial action/ alternate access as indicated.
-If AVF is patent but unable to cannulate or dialyze adequately, exam/fistulogram and remedial action as indicated.

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