# Vascular Access for Patients affected by non Renal Disorders

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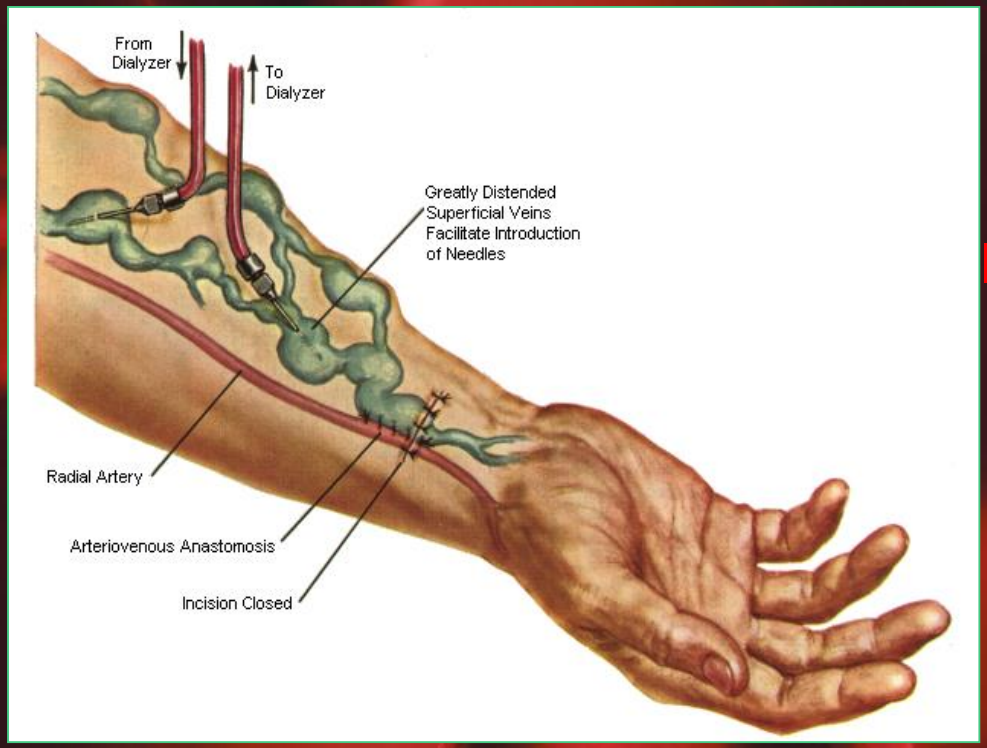
CX ST GEORGE'S
VASCULAR ACCESS COURSE

13th International Symposium
CHARING CROSS
CONTROVERSIES
CHALLENGES
CONSENSUS

# Disclosures

- Gore
- Covidien
- Maquet
- Proteon Therapeutics

# INTRODUCTION I




- First fistula in 1966: Brescia and Cimino, radio-cephalic, side to side anastamosis meant for HD but since…

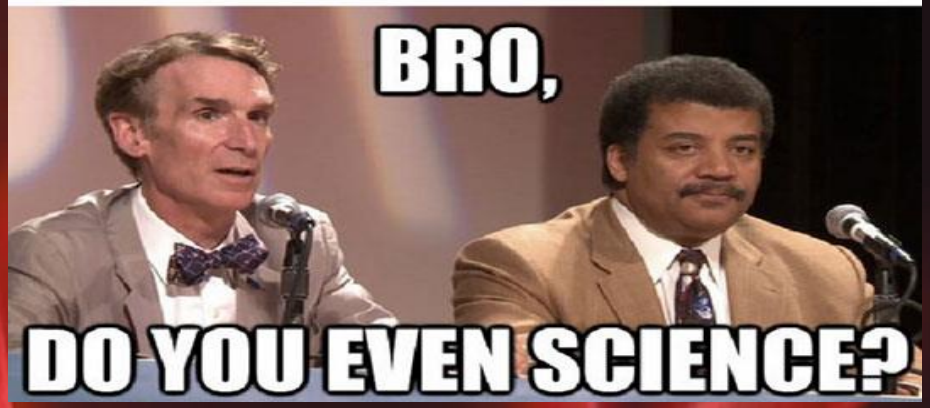
# Introduction

- AVFs have been used successfully for:
- Plasmapheresis
- TPN
- Sickle cell disease management

# The Evidence

- Only 12 articles identified in Pubmed for TPN only (106 cases)
- Nothing for plasmapheresis or Sickle cell disease.

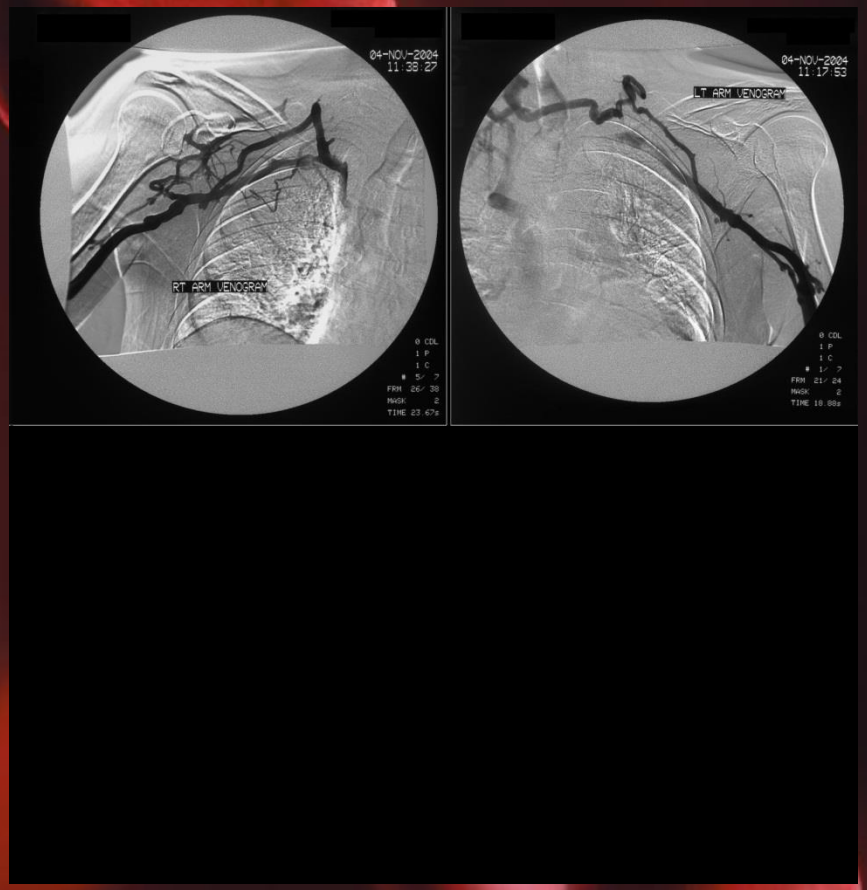
Inhofe brings snowball on Senate floor as evidence globe is not warming



# Personal Experience

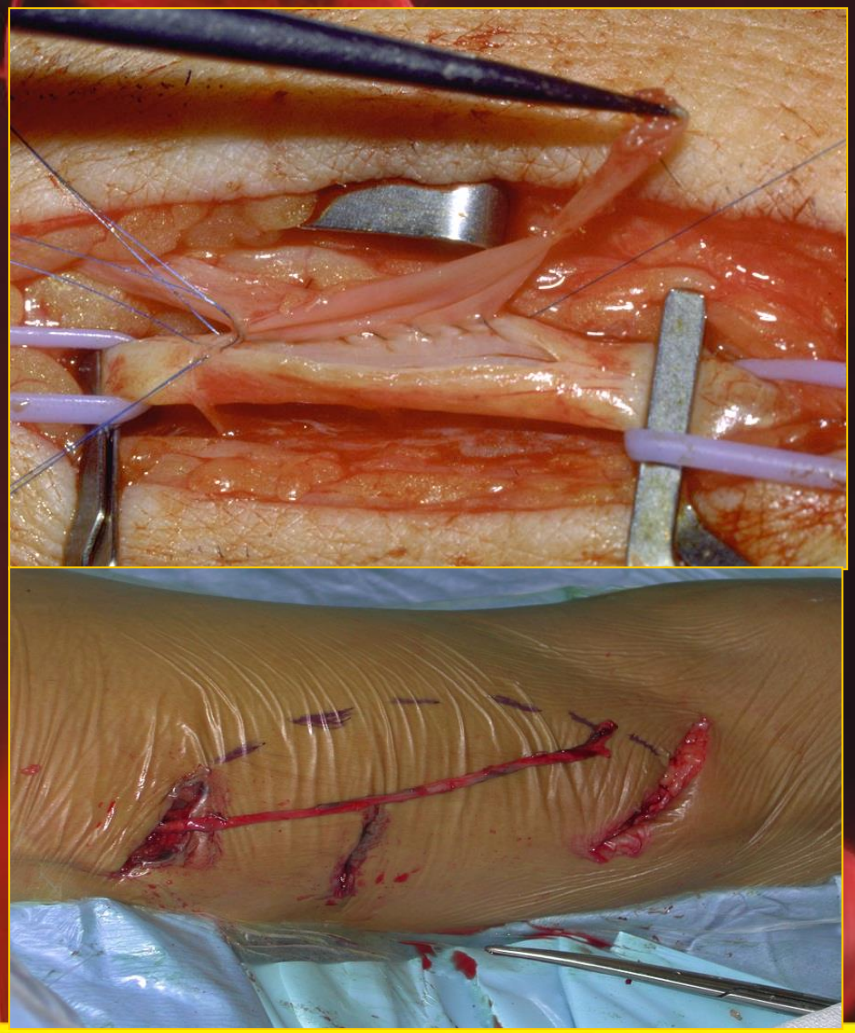
- Between 2005 and 2016 we have in St George's performed 10 cases for patients not affceted by renal diseases

- 3 for short gut syndromes in need of daily TPN
- 1 for Ehlers danlos syndrome also in need of daily TPN
- 4 for sickle cell disease patients in need of constant pain management
- 2 for homozygote family hypercholesterolemia in need of plasmapheresis ( 2 sisters)



# Type of accesses

- All patientts were referred late once their central veins were very diseased
- 4 leg fistulas ( 2 SFV transpositions and 2 SFA to Pop vein bypass using GSVs)
- 2 necklace grafts (sickle cell)
- 4 BC and BBAVFs (2 sisters)



# Choice of access

- Central vein patency
- Type of treatment needed:
  - For sickle cell patients, they need urgent pain management by any nurse anytime so the access should be very easy to cannulate hence the choice of necklaces

# Choice of access

- TPN: body image problems need to be taken into account, fem pop rather than SFV transposition on younger women
- For plasmapheresis the 2 cases suffered severe steal syndrome and had already had multiple procedures on their legs: Rescue of their arm AVFs plus DRIL procedures

# Our results

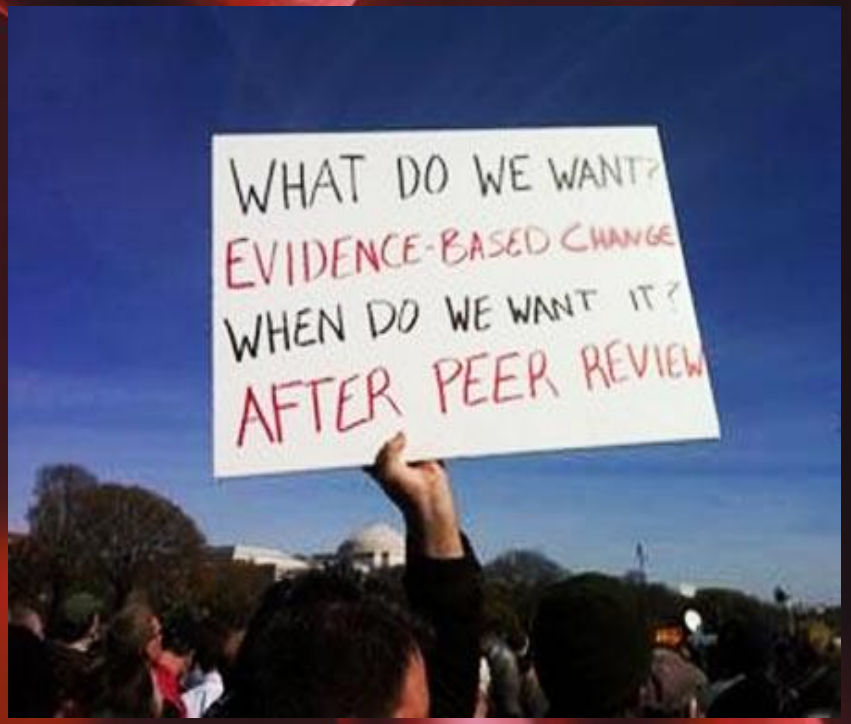
- Excellent patency rates: only one occlusion after 4 years (necklace graft)
- No infection
- Several revision for aneurysmal dilation (sisters)
- Better results because the Avfs performed are high inflow and far less often and less agressivley used than when it is for dialysis.

# The literature

- 106 Cases published
- 81 natives, 11 bovine grafts, 4 PTFEs and 10 autologous grafts

- Much better results than catheters

with regards to infection but a slightly higher occlusion rate than for some tunneled catheters

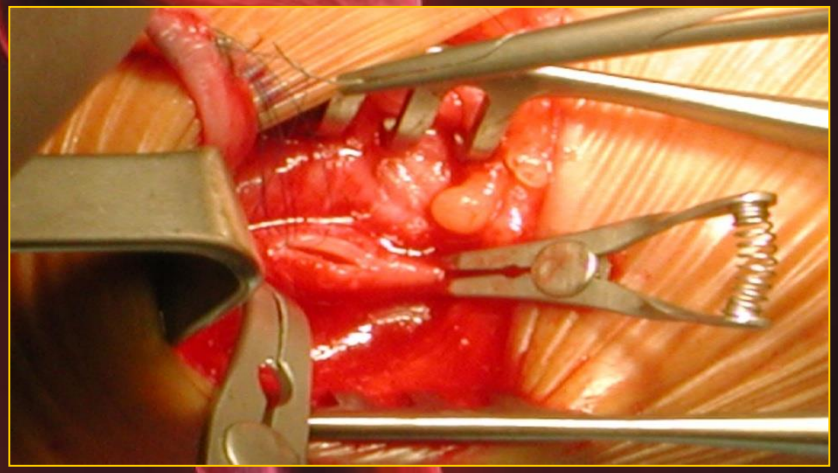


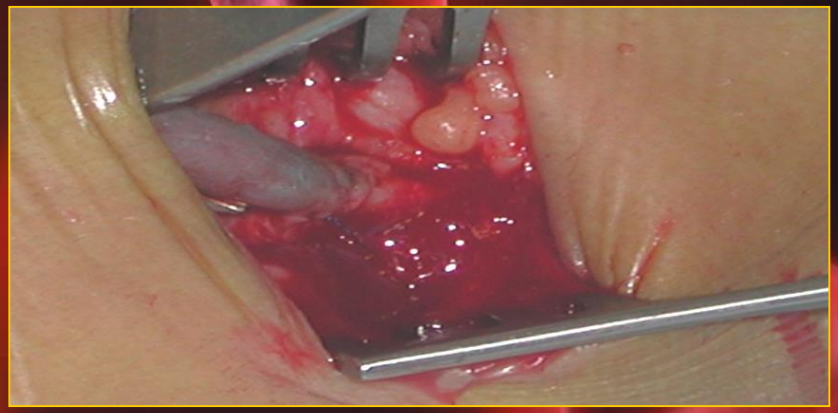
# Conclusion

- AVFs should be bconsided for the above indications
- Referrals should come much earlier so the choice of access is better
- That necessitaes communicating to Gastro-enterologists or haematologists as some are still very reluctant to consider referring.

# ESRD:

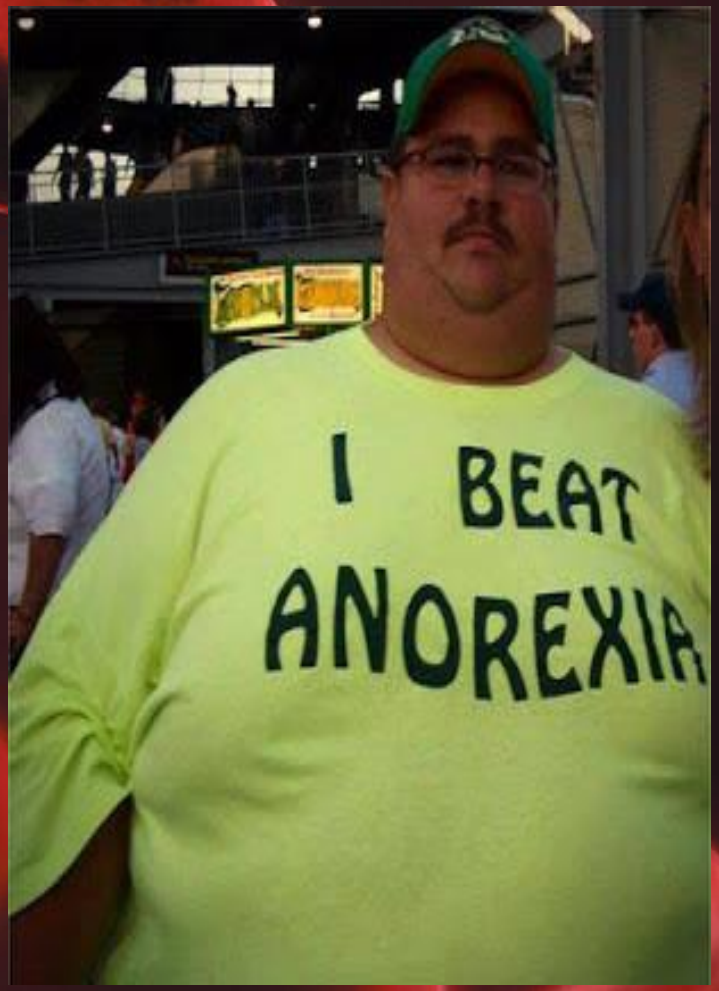
- It should account for age, RF, life expectancy, ethnic background
- Patient choice, refusal rate
- It should avoid CVCs
- Bespoke





# Natives only if

- Vein is >2.5mm
- Age <80
- Palpable pulses
- Life expectancy is >2 years
- No diabetes or without vascular complications
- Vein is not deeper than 9mm
- We cannulate before 2 weeks: US guided, reducedd pump speed, 17 Gauge needle



# If not, when upper limb options are available

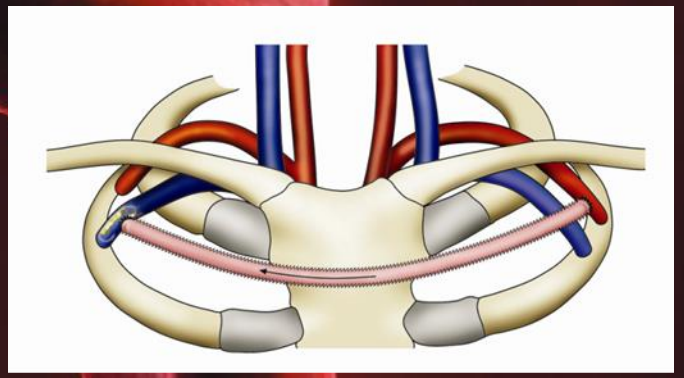
- Admit night before, dialyze and CVC out
- Early cannulation graft
- Usually straight brachio-axillary
- Small incisions, quick intervention short arterial anastomosis but long venous.
- Heparin subcut. for 24 hrs then antiplatelet or warfarin according to underlying condition

# New grafts are now available

- Early cannulation: Less CVCs
- Semibiological or biological: better patency-less infection
- Spiral flow pattern technology: better patency
- Nano technology: less infection better cannulability
- Hybrid grafts: easier handling so more indications?
- HeRO catheter to push some boundaries further
- Cutting edge technology?

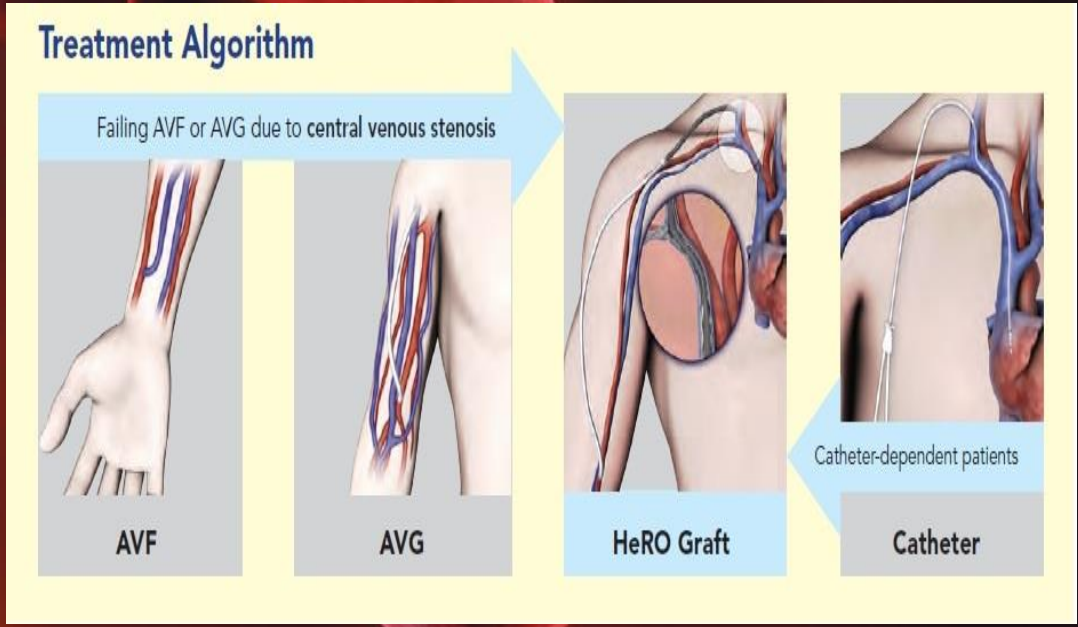
# When all upper limb options are exhausted

- The SVC is open and even if one innominate is occluded
- Necklace straight or loop graft
- Axilary artery to axilary vein graft
- Remove CVC before surgery
- Use an early cannulation graft
- Result: Early cannulation necklaces between 2008-10: 16 cases, no CVC used before first cannulation; PP and SP at 6 weeks and 1 year: 92.9%-65.7%and 92.9%-83.5% (Semin Dial 2011;24: 456-9)
- Moreover very few infections: Out of a total of 37 grafts until 2014 only 2!



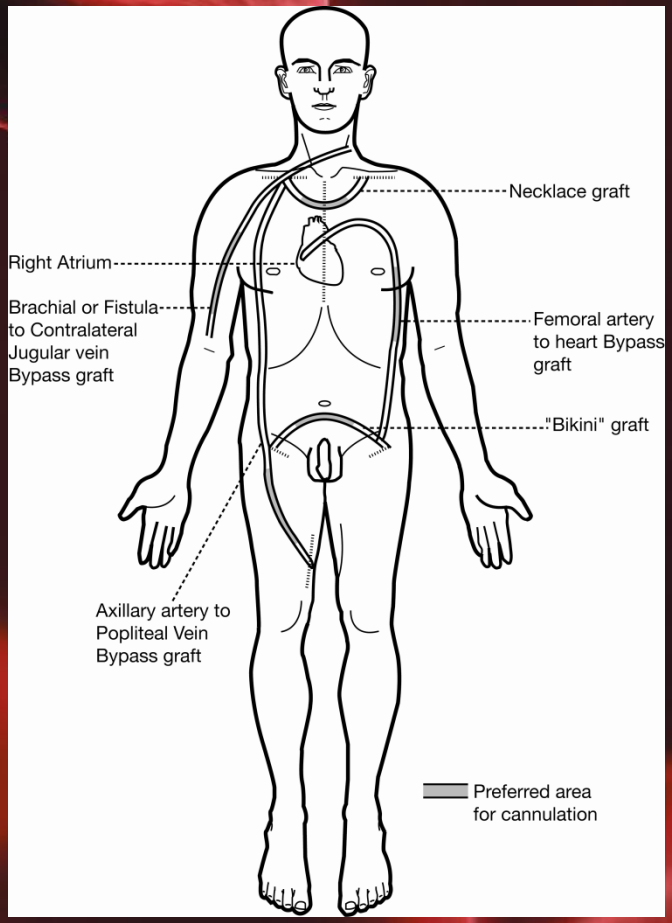
# So here is the protocol:

- All upper extremity options are exhausted
- Bilateral innominate or SVC occlusion
- HeRO catheter is indicated before a LEAVG
- Hybrid between a PTFE graft and a CVC
- The evidence shows similar results for both technique (Ann Vasc Surg, JVS, EJVES largest series 164 pts)
- So why not spare the lower limb for when the HeRO fails and all upper extremity options are REALLY exhausted?



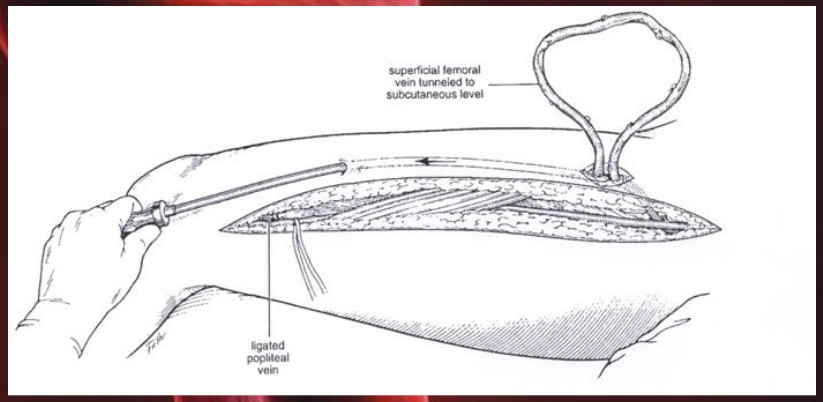

# Complex procedures

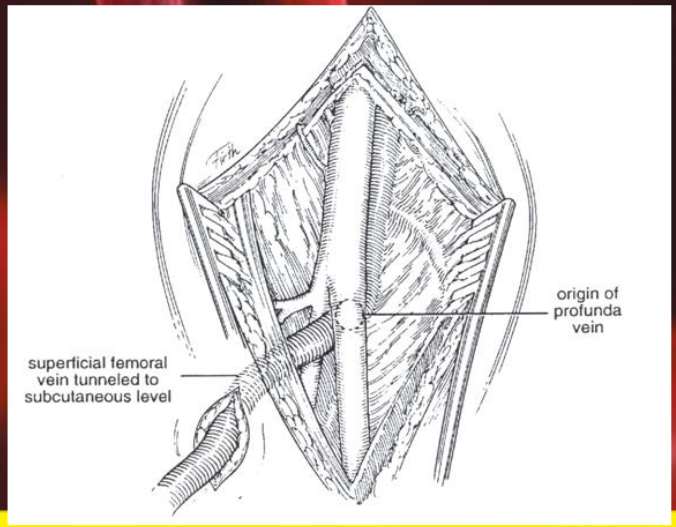
- There is no case that we will not consider even for very complex rescues or operations
- We have achieved excellent patency rate and out of hospital management on this cohort of patients 77% secondary patency (Semin in Dial 2006,19: 246-50)



# Complex procedures

- Superficial femoral vein transposition is an excellent native access for complete SVC thrombosis
- If patient obese or diabetic then Axillary artery to popliteal vein bypass graft
- Even one case of a bypass to the heart (NDT, 2007, 22: 970-1



# Occluded accesses

- Never abandon the access without trying to rescue it
- Surgery or endovascular according to what is available easily locally
- Fogarty catheters or clot busters allow to recue weeks after the event
- Access rescued ready for immediate use