OPTIONS IN PATIENTS WITH BILATERAL BRACHIOCEPHALIC VEIN OCCLUSION

Karl A. Illig, MD
VEITH 2018

Brachiocephalic Vein Occlusion: CONFLICTS OF INTEREST

• None

Brachiocephalic Vein Occlusion: THE PROBLEM

• Venous outflow to the heart is obstructed.
• Recently classified by Society for Interventional Radiology (type 3?)

Occluded SCV with massive collateralization

Brachiocephalic Vein Occlusion: STEP 1

• Is the access worth saving?
  • Quality of access
  • Degree of symptoms
  • Health, age, and life expectancy of the patient
  • Many others

Brachiocephalic Vein Occlusion: STEP 1: IS ACCESS WORTH SAVING?

• Given BILATERAL occlusion – the other side is not any better an option than what you have.
• Leg (or “exotic” outflow) is the only other option
Brachiocephalic Vein Occlusion:
STEP 1: IS ACCESS WORTH SAVING?

- Leg? Not a bad option
  - The “old days” – very high infection rate, disproportionate morbidity and mortality
  - 2000s: Leg AVF (superficial femoral vein)
    - Wound complication rate about 100%
    - Limb loss rate as high as 25%

- Today: Predominantly grafts, based off of the superficial femoral system (must be relatively non-diseased)
- Stay out of groin – skin and lymph node areas
- Results empirically seem to be fairly good
- Surprisingly high patient satisfaction

Brachiocephalic Vein Occlusion:
OPTIONS

- Option 1: Ligate access, place thigh access

Brachiocephalic Vein Occlusion:
STEP 2: ACCESS IS WORTH SAVING

- Can you directly recanalize? Not so straightforward.
  - Need access from above and below
  - Need sophisticated imaging, pre- and intraop
  - Need specialized tools: Steerable sheath, multiple wire options, snares
  - Need bailout options: Covered stents
Brachiocephalic Vein Occlusion: 
STEP 2: ACCESS IS WORTH SAVING

• Successful recanalization?  
  • Now you probably have a stent through the costoclavicular junction....

Brachiocephalic Vein Occlusion: 
STEP 2: ACCESS IS WORTH SAVING

• Successful recanalization?  
  • Now you probably have a stent through the costoclavicular junction (The Wrath of Karl)… need to consider thoracic outlet decompression.  
  • Perhaps covered stents work better in this situation?

Brachiocephalic Vein Occlusion: 
OPTIONS

• Option 1: Ligate access, place thigh access
• Option 2: Recanalize, stent, remove rib

Brachiocephalic Vein Occlusion: 
STEP 2: ACCESS IS WORTH SAVING

• “Inside out” technique?  
  • Relies on the fact that the veins are anterior to everything else (arteries and brachial plexus).  
  • Homemade (steerable sheath and back end of the wire, small cutdown  
  • Bluegrass/Surfacer product
**Brachiocephalic Vein Occlusion: \STEP 2: ACCESS IS WORTH SAVING**

- "Inside out" technique?
  - Best option: Place a catheter acutely, return to convert to HeRO in a few weeks
  - Infection perhaps reduced by this technique
  - Psychology
  - HeRO can connect to existing access, by the way

**Brachiocephalic Vein Occlusion: \OPTIONS**

- Option 1: Ligate access, place thigh access
- Option 2: Recanalize, stent, remove rib
- Option 3: "Inside out" to HeRO

**Brachiocephalic Vein Occlusion: \STEP 2: ACCESS IS WORTH SAVING**

- Very good risk patient, long life expectancy: Consider direct surgical reconstruction
- EXPOSURE: Claviculectomy, "Molina procedure." Thoracic outlet and/or thoracic surgeon

**Brachiocephalic Vein Occlusion: \STEP 2: ACCESS IS WORTH SAVING**

- Very good risk patient, long life expectancy
  - Subclavian to atrial appendage bypass
  - Does not require sternotomy (third interspace pericardotomy)
  - Published N perhaps 20 patients, long-term outcomes unknown
Brachiophalic Vein Occlusion: OPTIONS

• Option 1: Ligate access, place thigh access
• Option 2: Recanalize, stent, remove rib
• Option 3: Direct surgical reconstruction
• Option 4: Subclavian to atrial appendage bypass

Brachiophalic Vein Occlusion: THE BOTTOM LINE

• Think long and hard as to whether the access is worth saving.
  • If it is not – a thigh AV graft is not a bad option, if done correctly
  • If it is – find an experienced interventionalist or thoracic outlet surgeon to work with!

Come and visit us!
803-395-2145