AVMs: Curative Technique Using The Transvenous Approach

Or: Where is the Nidus?

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Making Ethanol safe(r)

- Direct injection methods
  - Butterfly needles
  - IV cannulas
  - Needles
    - Small light add-on tubing from B. Braun and others

- Transvenous embolization for AVMs
  - Major advance in AVM therapy
  - Curative for many pelvic AVMs and other similar lesions
Transvenous treatment of AVMs: A major advance in safety and efficacy

- Used in specific types of AVMs with dominant or single outflow vein anatomy
- Direct puncture or transvenous catheterization of venous sac(s) guided by arterial opacification
- Coil packing of sac with alcohol ablation
AVM venous approach

- If lesion has favorable anatomy; go straight to venous coiling
- Very often curative in single step
Hand AVM treated by direct puncture and transvenous ethanol
So Where *Is The Nidus*??

- Look carefully at flow
- When do you first see the vein??
  - Work backward from the first vein
- Examine everything including bone
Finding the nidus—the central task

- First viz of vein
  - Work backward from the that point
- Lots of views!
- More frames/sec (6+)
- Multiple injection sites including nondominant vessels—collaterals may often point to nidus
Finding the nidus

- Once in nidus do sequential angio to confirm proper position
- Intranidal injection should only fill outflow veins!
Hand AVM
46 year old woman with enormous pelvic AVM
Direct puncture of Intraosseous lesion with coils and ethanol
Intraosseous nidus treated by direct puncture into venous sac
Final After 2 treatments
AVM venous approach

- The safest (and frequently the only) approach necessary to cure AVMs of a specific type—often in a single session
Not all AVMs can be treated with the transvenous approach

- **Intra-arterial ethanol** still commonly used
  - Must be handled with extreme caution
- Direct puncture into nidus may decrease complications or when transcatheter methods are not possible
  - Diffuse hand AVMs
- But—where is the nidus?
Complex LE AVM multiple prior embolizations

Where the hell is it?
7cc Etoh injected with outflow compression for 4 minutes

With outflow compression
Do not confuse the path with the target

56 year old woman with multifocal AVM including previously venous outflow coiling. Residual soft tissue AVM

WTF??
Ah—there it is…time to treat Wrong!
Direct puncture of nidus—8cc Etoh
Am I In The Nidus?

- The critical issue when treating AVMs.
- Very difficult
- Diligence, persistence necessary
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