Soft Tissue US & DVT

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Objectives

- US DVT
- Foreign body localisation & removal
- Abscess localisation
US DVT

- Incidence: 1 per 5000  Bandolier Apr 2003 110-112
- Important
- Physical exam unreliable
- EPs can do it!  Acad Emerg Med 2000 7; 120-6
DVT algorithm

Wells Score & D-dimer

Low pretest probability
- D Dimer - ve
  - DVT Excluded

D Dimer + ve
- DVT

DVT US
- + ve
  - Repeat US In 1 week
  - D dimer +ve
    - DVT
  - D dimer -ve
    - DVT Excluded

Mod/High pretest probability
- D Dimer + ve
  - DVT

D Dimer - ve
- DVT Excluded
<table>
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<tr>
<th>Test</th>
<th>Advantages</th>
<th>Disadvantages</th>
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| Venography   | Gold standard  
Sens 99%  
Easy interpretation  
Pelvic veins | Specialised equipment  
Allergy  
Phlebitis  
Invasive |
| US           | Prox DVT Sens 95%  
Non invasive  
Bedside | Inference  
Calf/pelvic DVT |
Common Femoral Vein
Superficial Femoral Vein
Popliteal Vein
Principles

- Compression
- Colour flow doppler
- Spectral doppler
Technique

- Pt position
  - Supine
  - Hip ext rotated, knee flexed
  - Head up
- 5-12 MHz linear array transducer
- 3-5 MHz if large
3 Point Compression

- CFV, Mid SFV, Pop V
- Complete collapse

- CFV = CFA size
- Echogenic thrombus
Colour Flow
FB Localisation
F B’s

- Often hand or foot
- Often missed
- Sometimes radiolucent (metal/glass ok)
- US sensitive for wood (79-95%), plastic, graphite
- Specificity 86-97%
- Successful removal depends on size & superficial position
FB’s

- Hyperacoustic
- Artifact
  - Shadowing (not always)
  - Comet tails (Pellets)
  - Reverberation (Needles)
- Halo
Hypoechoic halo

- Helps localisation
Trans sec.  longit.

arrow --> foreign body
Technique

- 7.5-10 MHz
- 5.0 MHz if deeper
- Endocavity
- Sector may be advantage (footprint)
- Stand off
Stand off
Localisation

- 2 planes
- Systematic – map out size/shape
- FB clearest with long axis parallel
Removal

- Draw edge of transducer
- Various needle techniques:
  1. 1 needle tip to FB then incise, > 10 mins
  2. 1 needle under FB, >10 mins
  3. 2 needles under FB at 90°, <4 mins
- Haemostat or forceps direct vision
Pitfalls

- Inadequate anatomy knowledge
- Unnecessary removal
- FBs may be smaller than US resolution
- Misinterpretation of striations and scars
- Multiple FBs
- Telling pt FB is excluded
Abscess Localisation/Drainage

Advantages of Sonography:
- Differentiates abscess from simple cellulitis
- Guides timing of I&D
- Guides location of I&D
- Guides aspiration
Differential

- Cellulitis
- Phlebitis
- Pyomyositis
- Fasciitis
- Bursitis
- Joint effusion
- Tendonitis
- Haematoma
- Lymphadenitis
- Tumour
Cellulitis

Hyperechoic
Thickening

Cobblestone
Other side
Technique

- 5-10 MHz linear
- 3-5 MHz convex (sector)
- Endocavity
- Consider standoff
- Systematic scan in 2 planes
- Light pressure (pain)
- L.A/sedation
- Cover
Abscess

- Hypoechoic cavity
- Hyperechoic vascular rim
- Irregular edges
- Septations
- Heterogenous
- Posterior acoustic enhancement
Isoechoic
Diagnostic help

- Doppler
- Posterior acoustic enhancement
- Pressure
  - abscess compresses
  - ‘bounce’
Drainage

- Find best site
- Aspirate (direct vision)
  - Breast
  - Neck
- Mark in 2 planes
- Incise
Questions?
Take Home Messages

- DVT
  - 2 or 3 pt compression
  - Colour/spectral
  - Propagators
  - Pelvic DVT

- FB
  - Hyperechoic
  - Artifact
  - Don’t exclude

- Abscess
  - Identifies
  - Localises
  - Aids aspiration