Musculoskeletal Ultrasound
Musculoskeletal Ultrasound

Introduction

• Very popular and widely utilized in Europe and Australasia
• Few scattered centers of excellence in USA
• Early dominance of MRI
• Financial
• Attitudes
• Technological advances of US more recent
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Equipment

• Frequency 5-15MHz
• Linear array
• Compound
• Extended field
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Pros

• Higher resolution in near field
• Dynamic
• Scan both sides
• Interactive, targeted
• Cheap, Fast, Well tolerated, Safe
• Colour and Spectral Doppler
• Guide injection
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Cons

• Can’t see into bone, or beyond bone
• Limited resolution at greater depths
• Artifacts
• Operator dependant
• Patient body habitus
• Post op can be difficult
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Artifacts

• Anisotropy
• Refraction
• Posterior shadowing
• Posterior enhancement
• Reverberation
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Technique

• Scan in at least 2 planes
• Assess all ‘abnormalities’ (?artifact)
• Be dynamic
• Be interactive
• Use Doppler
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Shoulder

• Most common site
• Excellent for rotator cuff
• Good for extraarticular biceps
• Good for ganglia
• Dynamic interactive
• Poor for deep structures
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Elbow

• Biceps insertion
• Common extensor origin
  – Tennis elbow
• Common flexor origin
  – Golfer’s elbow
• Insertional tendinopathy
• Loose bodies
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Wrist and Hand

- Ganglia/Arthrosynovial cyst
- GCT of tendon sheath
- UCL ? Stenner’s
- CTS/Guyon’s canal
- Tendinosis
- Scaphoid Fx
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Groin

- DDH
- Groin pain
  - Adductors
  - Hernia
    - Inguinal
    - Femoral
    - Abdominal wall
  - Hip, effusion, paralabral cysts
  - Psoas bursa
  - Rectus origin
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Knee

• Patella tendon
• Mass in popliteal fossa
• Meniscal cysts
• Quadriceps strain
• Collateral ligament injuries
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Calf

- DVT
- Ruptured popliteal cyst
- Muscle strain
- Muscle hernia
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**Ankle**

- Tendons
  - Achilles
  - Medial
  - Lateral
- Ligaments are limited
- Tarsal tunnel syndrome
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Foot

• Morton’s neuroma
  – Steroid injection
• Ganglia
• Plantar fasciitis
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Foreign Body

• If body not seen on X-ray
• If body could be radiolucent
• Must scan in 3 planes
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Tumours

- Good visualization
- Vascular relationships
- Must use Doppler
- Anatomy requires real time knowledge
- Limited characterization
- Biopsy
Biopsy

- Preferred method for most ST masses
- Real time
- See mass
- See needle
- See things to miss
- ? Sterility a problem
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Fetal US

- Club foot
- Open neural arch of spine
- Short stature
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Future

• Higher frequency
• Improved resolution at greater depth
• Tissue characterization
• Improved 3D
• Widespread acceptance
• Quality control