

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

Musculoskeletal Ultrasound Equipment

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

Musculoskeletal Ultrasound

Pros

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

Musculoskeletal Ultrasound

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

Musculoskeletal Ultrasound

Artifacts

- Anisotropy
- Refraction
- Posterior shadowing
- Posterior enhancement
- Reverberation

Musculoskeletal Ultrasound

Technique

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

Musculoskeletal Ultrasound

Shoulder

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

Musculoskeletal Ultrasound

Elbow

- Biceps insertion
- Common extensor origin
 - Tennis elbow
- Common flexor origin
 - Golfer's elbow
- Insertional tendinopathy
- Loose bodies

Musculoskeletal Ultrasound

Wrist and Hand

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

Musculoskeletal Ultrasound

Groin

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

Musculoskeletal Ultrasound

Knee

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

Musculoskeletal Ultrasound

Calf

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

Musculoskeletal Ultrasound

Ankle

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

Musculoskeletal Ultrasound

Foot

- Morton's neuroma
 - Steroid injection
- Ganglia
- Plantar fasciitis

Musculoskeletal Ultrasound

Foreign Body

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

Musculoskeletal Ultrasound

Tumours

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

Musculoskeletal Ultrasound

Biopsy

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

Musculoskeletal Ultrasound

Fetal US

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

Musculoskeletal Ultrasound

Future

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