Imaging soft-tissue masses of the foot and ankle

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Scope
• Approach
• Review of conditions
• Conclusion

Imaging characteristics
• Cystic/solid
• Location
• Appearance
**Cystic mass**

- Ganglion/synovial cyst
- Bursitis
- Tenosynovitis
- Cystic neurogenic tumour

**Ganglion**

- Uni/multi-loculated cystic lesion - round, oval, lobulated or septated mass
- May communicate with fibrous tendon sheaths or joint capsule
- Occur most frequently in the hand and wrist
- Clinical presentation - swelling or pain

**Bursitis**

- Bursa
  - Fluid-filled sac
  - Allow for smooth movement
- Normally not visualised unless distended with fluid
- Inflammation of bursa
- Excessive pressure or repetitive movement
Imaging characteristics

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Plantar fibromatosis

- M>F
- Nodular thickening of plantar fascia - medial (60%) or mid-portion (40%) of fascia
- Several nodules may co-exist in same fascia. ~ 1/3 are bilateral
- Majority located within mid-substance or plantar aspect of plantar fascia

Morton's neuroma

- Not true neuroma
- Related to repetitive trauma
- Most commonly 3rd inter-metatarsal space
- Young women, athletes
- Clinical presentation

Gout

- Asymmetric distribution
- Erosions
  - Para-articular
  - Sharp sclerotic margins and overhanging edge
- Osteopenia – usu absent
- Joint space narrowing - not usually present

Imaging characteristics

- Cystic/solid
- Location
- Appearance
Lesion appearance
- Lipoma, neurogenic
- Vascular tumours
- Synovial chondromatosis
- PVNS
- GCT tendon sheath

Haemangiomas
- Most frequent benign foot tumors of vascular origin
- Can be superficial or deep-seated
- Xr
  - Phleboliths
- MRI
  - T1W – look for fat signal
  - T2W – high SI, multilobulated, septated
  - Phleboliths
  - Contrast-enhancement

Synovial chondromatosis
- Benign condition involving synovial lining of joints, bursae or tendon sheaths
- Synovium undergoes metaplasia, forms cartilaginous loose bodies (may ossify)
- Monoarticular
- Knee, elbow, shoulder and hip
- MR – variable signal

PVNS
- Benign proliferative disorder of synovium
- Joint, tendon sheath & bursa
- Diffuse or nodular (localised)
- C/F
  - swelling +/- pain
  - 3-4th decade

GCT tendon sheath
- Benign synovial proliferation within tendon sheath
- Lobulated soft tissue mass immediately adjacent to tendon
- May or may not be painful
- Features :
  - soft-tissue mass adjacent to tendon
  - ~20% of cases show cortical erosion
  - MRI – low to intermediate T1W, T2W
  - +/- blooming

Conclusion
- Common cause for referral for imaging
- Imaging useful for
  - Confirmation
  - Assessment – extent and characterization
- Approach
- Benign neoplasms constitute the majority of soft-tissues masses around ankle and foot