Foot and Ankle Examination

Introduction
- Wash hands, Introduce self, ask Patients name & DOB & what they like to be called, Explain examination and get consent
- Expose knees and below
- General inspection: patient e.g. age, mobility, trauma, risk factors; around bed e.g. mobility aids.
- Shoes: wear pattern, insoles

Look
- Gait: phases of gait looking at knee, ankle, limp, movement restriction
- Standing inspection:
  - Front: hallux deformities (lateral angulation of big toe = hallux valgus), lesser toe deformities (flexed PIP joints = hammer toes; flexed DIP joints = mallet toes; flexed PIP joints and DIP joints with pes cavus = claw toes)
  - Sides: foot arches (pes plantus = flat foot; pes cavus = high arch, usually with clawed toes – neurological cause)
  - Behind: alignment of hindfoot (5˚ valgus normal)
  - Tip-toe standing inspection: re-inspect foot arch (if there was pes cavus that corrects = flexible pes cavus; no change = rigid pes cavus), big toe flexion (no flexion = hallux rigidus), hindfoot varus/varus angulation change (normal hindfoot 5˚ valgus should correct into varus)
- Lying inspection: skin (scars/arthroscopic portals, bruising, erythema), joints (swelling, effusions), muscles (wasting), heel (callosities), between toes (ulcers), nails (psoriatic changes), feel up extensor surface of lower leg (psoriasis plaques, rheumatoid nodules, gouty tophi)
- Measure calf muscle bulk: measure calf diameter 10 cm below tibial tuberosity

Feel
- Ask if any pain first.
  - Temperature
  - Bony landmarks – assess joints for tenderness & feel for bony swellings, effusions, synovitis, deformities
    - Ankle: medial malleolus, lateral malleolus, anterior joint line
    - Hindfoot and midfoot: feel around joints in an n-shape from lateral distal, to lateral proximal, across dorsum, to medial proximal to medial distal
    - Forefoot: feel all joints in circle (metatarso-tarsal joints, metatarsal heads, MTP joints and IP joints)
  - Tendons: deltoid ligament (medial ankle), lateral ligament complex (lateral ankle), Achilles tendon
  - Plantar fascia: feel for thickening, tenderness, fibromatosis
  - Squeeze forefoot (pain may be Morton’s neuroma)

Move
- Best assessed with patients legs handing over bed
  - Ankle movements: actively and passively (feel for crepitus): dorsiflexion 20˚ and plantarflexion 40˚; inversion and eversion at subtalar joint (by stabilising ankle with one hand and moving heel with other)
  - Midtarsal movements: hold calcaneus with one hand and abduct 10˚ and adduct 20˚ forefoot with other hand
  - Toe movements: ask patient to: straighten toes fully (difficulty = joint disease, extensor tendon rupture, neurological damage); curl toes (cant curl toes in = tendon/small joint involvement); abduct (spread) toes and adduct toes (hold paper between); move MCPJs and IPJs passively (assess for limited movement and crepitus)
- SPECIAL TESTS
  - Simmond’s test: ask patient to kneel on a chair with feet hanging over edge. Then squeeze both calves and feet should plantar flex (no plantar flexion = Achilles tendon rupture).
  - Muscle power
    - Tibialis anterior: ankle inversion against resistance
    - Peroneus longus and brevis: eversion against resistance

Function
- (Gait: already seen)

To complete exam
- “To complete my examination I would examine the joint above, and also do a full neurovascular exam – would you like me to do this now?”
- Summarise and suggest further investigations you would do after a full history
Common pathology

- Pes planus (flat foot)
  - Loss of medial arch
  - May be flexible or rigid (non-correctable)
  - Flexible pes planus is normal in toddlers and is often asymptomatic in adults
  - Rigid pes planus may be due to tarsal coalition or tibialis posterior tendon rupture

- Hallux valgus
  - Lateral angulation of big toe
  - Usually occurs in older women
  - Can result in painful bunions on medial aspect of MTP joint (from shoe pressure)
  - May be treated with osteotomy or fusion

- Gout
  - Monoarthropathy caused by deposition of monosodium urate crystals in hyperuricaemia
  - Signs: tender, erythematous, inflamed joint
  - MTP joint most commonly affected
  - Acutely managed with NSAIDs/colchicines
  - Prevented by allopurinol, avoiding purine rich foods/drinks and stopping thiazide and loop diuretics

- Achilles tendon rupture
  - Patient feels like someone 'kicked them in the back of the leg' while pushing off with foot (e.g. while running)
  - Signs: unable to plantarflex, Simmond's test positive
  - May be treated by surgical repair, or in an equines cast in older less fit patients

- Charcot foot
  - Pain free joint destruction after minor trauma
  - Usually occurs in patients with peripheral neuropathy and diabetes
  - In undeveloped countries, tabes dorsalis and leprosy are common causes
  - Signs: erythema and swelling in the acute phase only, gross joint deformity, instability
  - Managed by educating patient, treating underlying cause, podiatry and joint protection