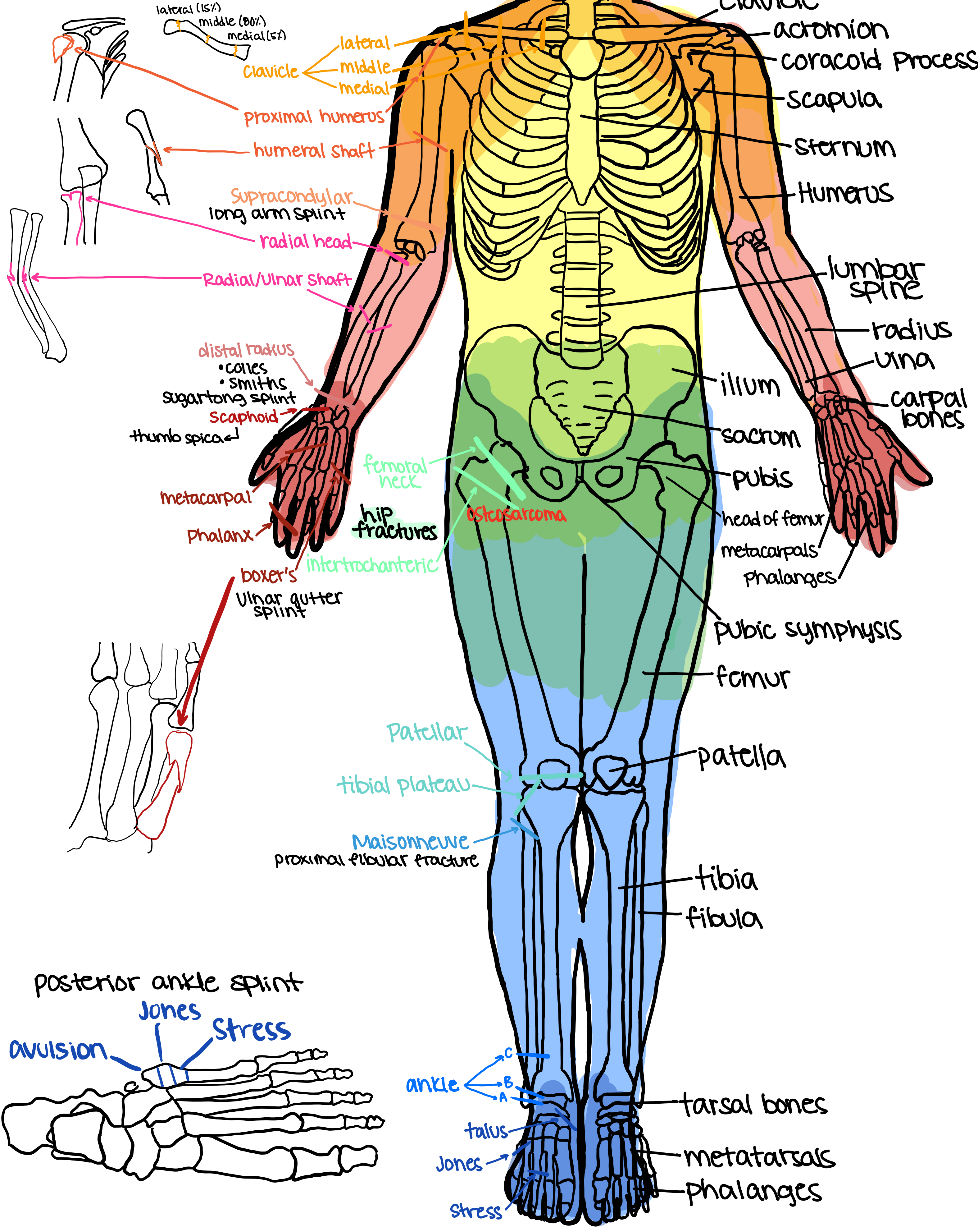
FRACTURES



DIGIT CONDITIONS

FINGER DISLOCATION

patho loss of normal alignment of joint
± associated fracture or soft tissue injury

clinical pain, swelling, deformity, ↓ROM

diagnosis 3V digit X-ray
- dislocation may be dorsal, volar, or lateral

treatment closed reduction and splinting
- longitudinal traction w/ pressure until in place
- ortho referral = definitive

PHALANX FRACTURE

patho MOI age dependent
- 10-29yo → sports
- 30-69yo → machinery
- >70 yo → falls

clinical tenderness, swelling, ecchymosis, ↓ROM, deformity

diagnosis 3V digit X-ray

treatment immobilization
- emergent → open, tendon rupture
- displaced → closed reduction

GAMEKEEPERS THUMB

weak pincer grasp

patho injury to ulnar collateral ligament w/ MCP joint instability at thumb
- commonly during sports

clinical swelling, tenderness along ulnar thumb MCP

diagnosis Xray rules out fracture
CT/MRI can confirm rupture

treatment
- partial tear → thumb spika 2-6 weeks
- significant → immobilize + refer

MALLET FINGER

patho disruption of terminal extensor tendon distal to DIP joint

clinical droopy finger at DIP joint
- unable to actively extend at DIP joint

diagnosis 3V xray finger

treatment
- nonoperative → splint x6-8wks
- operative → CRPP x 8 wks

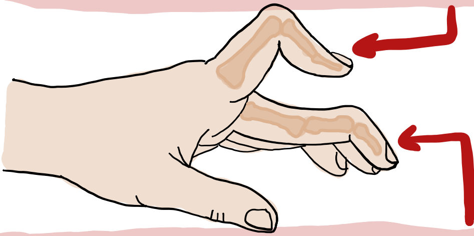
BOUTONNIERE DEFORMITY

patho rupture of central slip over PIP joint due to laceration, trauma, or rheumatoid arthritis

clinical PIP flexion, DIP extension

diagnosis clinical

treatment refer within 1 week if acute
- nonoperative → splint PIP x6wks
- operative → if acute or fails splint



DUPUYTREN'S CONTRACTURE

genetic. male > female

patho hyperplasia of palmer fascia with nodule formation and palmer fascia contracture

clinical typically chronic. Hx of nodules in hands → mild discomfort
- ring and small fingers most commonly

diagnosis clinical

treatment observation unless + table top test → consider needle aponeurotomy, xiaflex, surgical excision

SWAN NECK DEFORMITY

patho degenerative and common in RA
- causes: lax volar plate and imbalance of muscle forces on PIP

clinical DIP flexion, PIP extension

diagnosis Xray

treatment double ring splint
Operative = definitive

INFECTIOUS FLEXOR TENOSYNOVITIS

patho infection → inflammation of flexor tendon and sinovial sheath

diagnosis clinical. consider imaging

treatment emergent consult
- typically requires I/D and IV abx

clinical Kanavel signs -
- flexed posture of digit
- tendon sheath tender to palp
- pain w/ extension
- fusiform swelling

HAND/WRIST

INJURIES

METACARPAL FRACTURE

Patho trauma. 40% of hand injuries
AKA boxer's fracture

Clinical pain, swelling, eccymosis, ↓ROM

diagnosis 3 view hand

treatment reduction if needed.
- rarely operative
- splint if MCP in flexion

SCAPHOID FRACTURE

Patho fall on outstretched hand
- most commonly fractured

low blood flow to scaphoid creates watershed area and poor healing

Clinical tenderness at anatomical snuffbox

diagnosis wrist x-ray + Scaphoid view
- If x-ray negative → CT or MRI

treatment Urgent consult
non-operative → 8-10 wks thumb sica splint
± operative → avascular necrosis risk

DISTAL RADIUS FRACTURES

most common orthopedic injury
- often associated w/ ulnar fracture

Patho FOOSH or trauma

Clinical pain, swelling, ecchymosis, deform
- assess skin injury and NV exam

diagnosis 3 view wrist x-ray

treatment
nondisplaced/extrarticular → sugartong splint, ortho FU in 1 wk
displaced → reduction + post reduction xrays
non-operative → short arm cast x6 wks
operative → closed reduction (Percutaneous pinning) or open reduction internal fixation

Colles fracture: dorsally displaced
- typically results from fall on extended wrist. More common.
"Dinner fork" appearence

Smith's fracture: Volarly displaced
- typically results from fall on flexed wrist.

CONDITIONS

CARPEL TUNNEL SYNDROME

Patho compressive neuropathy of median nerve
- due to repetitive motions/vibrations

Clinical numbness, tingling
↓medial nerve sensitivity
Phalens, durkans, tinels

diagnosis Clinical

treatment cock up wrist brace @ night (first line)
- steroid injections
- release (open or scope)

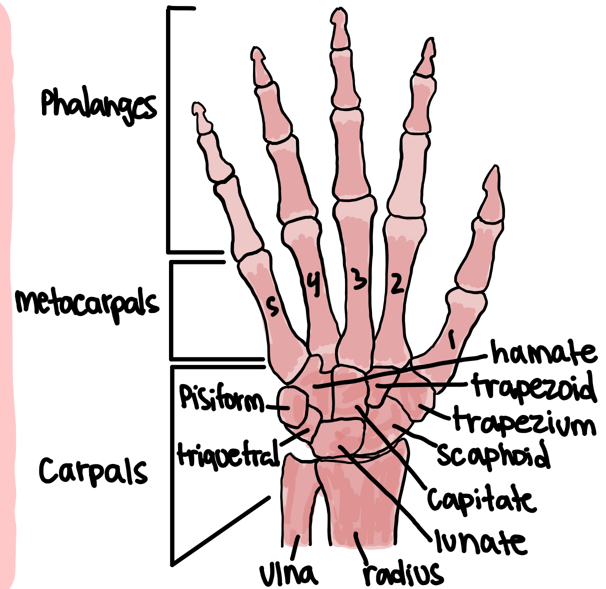
de QUERVAINS TENOSYNOVITIS

Patho Stenosising of 1st dorsal compartment
(abductor pollicus longus and extensor pollicus brevis)

Clinical radial sided wrist pain → worse when raising objects

diagnosis Clinical
+ finkelsteins

treatment thumb spica brace w/ NSAIDs
if severe, steroid injection/surgery



GANGLION CYST

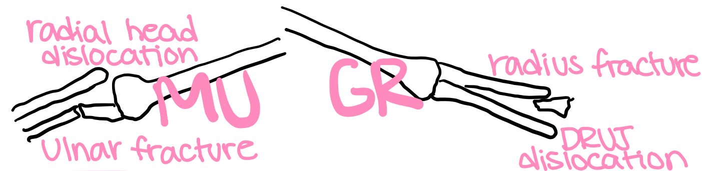
Patho fluid filled cyst overlying joint or tendon. dorsal wrist most common

Clinical firm, well circumscribed mass - transilluminates. Usually asymptomatic

diagnosis Clinical

treatment observation ± bracing, aspiration (50%), surgery (10%)

FOREARM AND ELBOW



Shaft fractures

patho diaphyseal fracture of radius and/or ulna
clinical Pain at forearm, swelling, ↓ROM. Assess pulses
diagnosis 2V forearm
treatment
- Peds → reduction w/ casting
- adults → Sugartong splint + refer → treated operatively

Galeazzi: radial shaft fracture w/ dislocation of DRUJ (distal radioulnar joint)

Monteggia: ulnar shaft fracture w/ radial head dislocation. can cause PIN neuropathy (thumb weakness)

Radial head fracture

patho FOOSH, occasionally elbow trauma
clinical Pain at radial head, elbow edema, ↓ROM (supination)
diagnosis 3V elbow xray
treatment
- displaced → Sling/posterior splint and early ROM (7-10 days)
- nondisplaced → sling/posterior splint
  - FU ortho within 1 week ± ORIF

Supracondylar humerus fracture

epi Peds (5-7yo)
patho MOA usually FOOSH. Distal humerus fracture common in Peds
clinical ↓ROM elbow, neuro exam required:
- AIN neuropaxia unable to flex thumb IP joint, index DIP joint (okay sign)
- median nerve injury ↓sensation volar index
- radial neuropaxia ↓extension wrist, MP, IP

diagnosis 3V elbow ± 2V forearm
treatment long arm splint → refer
emergent → NVC, open, compartments.

Elbow dislocation age 10-20yo

patho due to cascade of trauma to elbow
Posterolateral → axial force, rotation of forearm
clinical simple or complex (terribe triad - LCL tear, radial head fx, coronoid tip fracture)
diagnosis 3V elbow x-ray
treatment closed reduction, splinting, early motion if simple. ±ORIF. Refer.

Epicondylitis

Medial		Lateral
golfers elbow		tennis elbow
MORE COMMON	epi	laborers
overload of flexor-pronator mass at medial epicondyl; associated w/ ulnar neuropathy, UCL insufficiency	patho	overload at origin of common extensor tendon; repetitive gripping, forceful activity
pain worsened by: repetative mvmt, gripping, resisted wrist flexion; tender along medial epicondyl or 5-10mm distal	sx	pain worsened by: gripping, resisted wrist and long finger extension; decreased grip strength
Clinical; x-ray normal; MRI/US definitive	dx	Clinical; x-ray → calcifications; US → thick ECRB
RICE, NSAIDs x6 months; If failed, tenex or open debridement of pronator teres/flexor carpi radialis reattachment	mgmt	RICE, NSAIDs x6 months; If failed, tenex or open debridement of ECRB

Olecranon Bursitis

patho inflammation of fluid filled synovial sac
- trauma, pressure, infection

clinical pain worse w/ direct pressure.
- Painless, full extension differentiates from effusion

diagnosis Clinical.
septic → aspirate
treatment RICE, NSAID, PT
If septic → antibiotics
- steroid injection → no benefit

Cubital tunnel syndrome

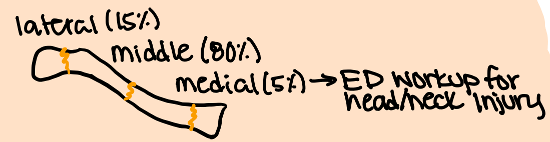
patho Ulnar nerve compression at elbow
clinical parathesis of small finger, ulnar ring
- motor sx less common

diagnosis tinels at elbow
- gold standard → EMG
- MR/US → ↑signal, thick

treatment brace @ night
operative → decompression or transposition of nerve

SHOULDER

Clavicle fractures



epi most common fracture in kids/adolescents
patho traumatic injuries - falls, MCVs, sports injuries
clinical pop, pain. Pneumothorax and bracial plexus injury are complications
diagnosis 2V clavicle (AP and cephalic tilt)
treatment sling, early motion. Surgery if open, unstable, NV compromise

Shoulder dislocation - dislocation of glenohumeral joint

Anterior - far more common

patho occurs when shoulder is abducted and externally rotated and anterior force occurs
clinical pain, deformity, ↓ROM
- loss of normal rounded appearance

diagnosis 3V shoulder (AP, Y, axillary) →
treatment reduction (+post-red imaging)
- immobilization → ortho within week

Posterior

patho seizures, electric shock most common mechanism when shoulder is adducted and internally rotated
clinical arm adducted / internally rotated. Flattening of anterior shoulder, prominence at coracoid and posteriorly
diagnosis AP may show lightbulb sign
treatment immobilize 4-6 weeks + PT
if recurrant → operative

Management → REDUCTION

Kocher: arm at side, externally rotated is forward flexed then internally rotated
Hippocratic: traction against a heel placed in patient axilla
Stimson's: weight hung from affected arm of patient in prone position
Always take post reduction xrays before discharge

AC joint separation

patho traumatic injury to AC joint w/ disruption of acromioclavicular and/or coracoclavicular ligaments
- direct blow or fall on shoulder

clinical hx trauma, pain over AC joint, abnormal shoulder contour
diagnosis 2V clavicle ± bilateral AP
treatment
I-III → nonoperative. Sling, early PT
IV-VI → operative. CC ligament reconstruction

Adhesive Capulitis AKA frozen shoulder

epi diabetes, thyroid disease
patho functional loss of both passive and active shoulder motion
- idopathic, post-traumatic, post-surgical

clinical external rotation deficits common. Stages: freezing (gradual, diffuse pain) → frozen → thawing (gradual ↑ROM)
diagnosis 3V x-ray (benign). ±MRI
treatment PT. ±NSAIDs, steroid injections
operative → capsular release (anesthetized)

Subacromial Impingement → Bursitis → partial to full thickness tear → massive RC tears → Rotator cuff arthropathy

epi first stage
patho compression of rotator cuff muscles by superior structures
sx insidious onset. Worsened by lifting, overhead activities, nighttime. Normal strength
+neer impingement test
+Hawkins test
dx 3V x-ray → normal. ±MRI/US
mgmt PT, NSAIDs, injections
operative → subacromial decompression

Biceps tendonitis

epi associated w/ subscapularis tears and shoulder impingement
patho inflammation/tendinosis of biceps tendon
sx anterior shoulder pain. +Speeds test, yergason's test. Popeye deformity
dx 3V shoulder benign. MRI/US
mgmt NSAIDs, PT, injections
operative → arthroscopic tenodesis

NECK

CERVICAL RADICULOPATHY (neck pain)

patho compression of cervical nerve root (C7 most common)
- usually due to spondylosis or disc etiology

clinical pain (neck/shoulder/arm), muscle weakness, sensory change, ↓DTRs
- Spurling test - pressure applied to top of head
- Shoulder Abduction Relief test

diagnosis clinical

treatment conservative w/ NSAIDs, ± muscle relaxants. PT!
- epidural steroid injections (for severe pain)
- SURGERY IF sx, evidence of cervical nerve root compression by MRI/CT myelography, AND progressive motor weakness

CERVICAL SPINE FRACTURES

JEFFERSON
- burst C1 fracture
- vertical downward force (diving, fall on head)
- very unstable

ODONTOID
- C2 dens/odontoid process
- forceful flexion or extension
- type I, II, III
- unstable

CLAY SHOVELERS
- fracture of the spinous process
- lower cervical
- MVC w/ forced flexion
- stable

RIBS

RIB FRACTURES

patho blunt trauma often associated with other severe injuries

clinical localized pain reproduced w/ deep breath/palpation
- look for crepitus, ecchymosis

diagnosis CXR ± "rib series"

treatment avoid "splinting"
- NSAIDs, incentive spirometry
- surgery NOT common

COSTOCHONDRITIS "costosternal syndrome"

patho unknown. upper costal cartilage at costochondral/sternal junction

clinical reproducible pain at costosternal area

diagnosis clinical.

treatment conservative

THORACIC OUTLET SYNDROME

patho brachial plexus (neuro) or subclavian (vascular) compression as they exit confined space between clavicle and sternum
- due to variant anatomy or trauma

clinical nerve compression - pain/paresthesia forearm/ulnar aspect of hand
vascular compromise - swelling/discoloration worse w/ abduction. Adson's maneuver.

diagnosis CXR → bony abnormality. vascular US.

treatment conservative
refer → acute/subacute progressive neurologic weakness, disabling pain/paresthesia, or failed conservative therapy → thoracic outlet decompression

PECTUS EXCAVATUM

"Funnel chest" - depression
- most common congenital anterior chest wall deformity (noted at age 1). POOR PFTs.
- asymp. in peds → ± DOE, rib pain.
- surgery → reconstruction

PECTUS CARINATUM

"Pigeon chest" - protrusion of sternum
- less common w/ later onset (puberty) → associated w/ scoliosis, congenital heart disease
- cosmesis main concern. Normal PFTs
- bracing or surgery

BACK/SPINE

SPRAIN/STRAIN
MC of back pain

patho Stretch/tear of muscle or ligament

clinical no neuro sx
- palpable spasm, ↓lordosis

diagnosis clinical
- imaging doesn't improve clinical outcome

treatment conservative
- NSAIDs, muscle relaxants
- Physical therapy

SPINAL STENOSIS
patho narrowing of spinal canal, lateral recess, or nerve root canal → nerve root compression

clinical neurogenic claudication
- back pain, sensory loss

diagnosis MRI

treatment conservative first, epidural steroid injections

± elective surgery → spacer, fusion, laminectomy

HERNIATED DISC
patho Protrusion of disc that leads to nerve root compression
- L5-S1 most common

clinical radicular LBP ± SLR

diagnosis clinical.

Imaging IF red flags or >12 wks
↳ MRI gold standard

treatment conservative - NSAID, steroids, opioids (pain), PT
- surgery → elective for disabling sx > 6 wks

	L1	L2/3/4	L5	S1
Sensory	inguinal	anterior leg, medial leg	lateral leg, dorsal foot	posterior leg, plantar foot
Weakness	hip flexion	hip flexion/abduction, knee extension	foot dorsiflexion, toe extension	plantar flexion, difficult toe walk
Reflex	N/A	knee DTR	± knee DTR	ankle DTR

EPIDURAL ABSCESS
rare

epi ETOH, DM, HIV, tattoos

patho suppurative infection in epidural space between dura and vertebra

clinical non-specific w/ fever, localized pain, neuro deficits.
- late finding - paralysis

diagnosis MRI w/ contrast entire spine
- WBC, ESR/CRP, blood cultures

treatment surgical decompression
- Abx (often long-term)

CAUDA EQUINA SYNDROME
patho compression of nerve roots due to
- extensive central disc protrusion, epidural abscess, tumor, spondylosis

clinical back pain PLUS radiculopathy, urinary changes, saddle anesthesia, loss of sphincter tone

diagnosis emergent MRI

treatment IV steroids pre-op → emergent decompression

VERTEBRAL COMPRESSION FRACTURE
patho osteoporosis-related (or malignancy) trauma (from high jump)
- loss of vertebral height

clinical acute mid back pain after cough, lift, fall
- insidious pain, height loss

kyphosis → multiple fractures

diagnosis X-ray often incidental (pain > 12wks)

treatment conservative - pain, bone loss
- Physical therapy
- vertebroplasty/kyphoplasty - vertebral augmentation procedures

SCOLIOSIS
epi female = male but curve progression 10x higher in females

patho lateral curvature (>10%) of spine. Likely genetic

clinical truncal asymmetry

exam: curvature of spine, shoulder/waist asymmetry
- adams forward bend
- scoliometer

diagnosis standing full PA spine
- Cobb angle >10%
- risser sign (skeletal maturity)

treatment refer to ortho

HIP

FRACTURES

	FEMORAL NECK	INTERTROCHANTERIC	TROCHANTERIC
patho	fracture of proximal femur, classified by anatomy.		
epidemiology	elderly	elderly	young
etiology	fall	fall	forceful muscle contraction
clinical	hip/groin pain, NWB, short, externally rotated; AVN risk	hip pain, NWB, short, externally rotated; tender trochanter	lesser: groin/knee pain; greater: lateral hip pain or tenderness
diagnosis	hip and pelvis xray ± cross sectional imaging		
treatment	ortho consult; ORIF vs arthroplasty vs. nonop		refer to ortho; usually non-op

DISLOCATIONS

ANTERIOR → slight hip flexion, external rotation
POSTERIOR → hip flexion, internal rotation, leg shortening

patho displacement of femoral head from acetabulum
clinical preceding trauma → pain, ↓ROM, deformity
diagnosis xray pelvis/hip
treatment emergent ortho consult for reduction
- ↓complications if within 6hrs
- post reduction imaging

AVASCULAR NECROSIS

patho vascular compromise leads to bone death and mechanical failure
clinical gradual pain, worse w/ weightbearing.
- non specific

diagnosis hip x-ray → crescent sign. MRI.
treatment controversial
- non-operative → not effective
- joint-sparing surgery w/ grafting, osteotomy
- total hip replacement is definitive. ESPECIALLY IF
  1. acetabular involvement
  2. joint collapse

SLIPPED CAPITAL FEMORAL EPIPHYSIS

patho displaces from femoral neck through physeal growth plate.
etiology: rapid GH, trauma, obesity, genetics
clinical dull ache through hip, groin, knee
↳ exacerbated by external rotation
diagnosis hip x-ray
treatment refer to ortho
NWB w/ crutches until ORIF

LEGG-CALVE PERTHES

patho AVN of the capital femoral epiphysis
- children. Idiopathic.

clinical limp x weeks. Gradual pain, worse w/ activity
- ↓abduction/internal rotation

diagnosis hip xray → crescent sign. Bone scan or MRI
treatment refer, NWB
- movement important
- period of casting/bracing

COMPARTMENT SYNDROME

patho ↑pressure within compartment compromising circulation and tissue function.
- >30mmHG → ischemia

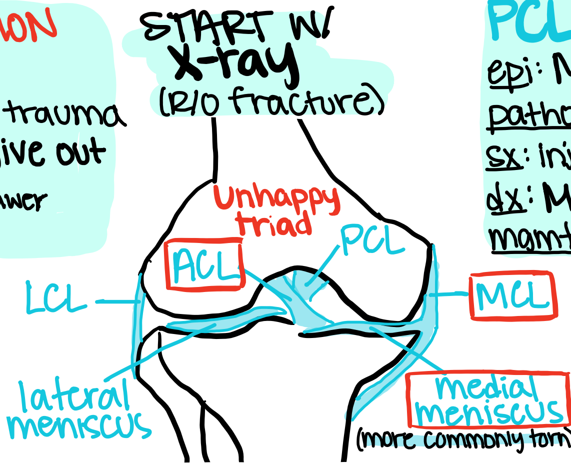
clinical SX progression over hours → pain out of proportion to injury, paresthesia.
PE → pain w/ passive stretch. Tense/wood like. Pallor. ↓sensation. Muscle weakness → paralysis
diagnosis hx + PE + measurement of compartment pressures
treatment SURGICAL EMERGENCY → fasciotomy definitive
- remove dressings, limb level w/ heart, analgesic, IV fluids if hypotensive
- HBO adjunct

KNEE

OTTAWA KNEE RULES

Knee X-ray IF: >55 years old, tenderness of fibular head, isolated patellar tenderness, unable to flex knee to 90 degrees, unable to bear weight immediately AND at time of evaluation

ACL injury MOST COMMON
epi: athletes. ↑Q angle.
patho: pivot, hyperextension, trauma
sx: pop followed by swelling, give out
dx: MRI. Lockman > anterior drawer
mgmt: conservative → refer



PCL injury
epi: MVC, sports
patho: proximal tibia force (knee flexed)
sx: injury followed by pain (popliteal fossa)
dx: MRI to confirm. Posterior drawer
mgmt: conservative → refer

LCL injury
epi: athletes
patho: varus stress - blow
sx: line tenderness, joint laxity
dx: MRI if major

MCL injury
epi: athletes
patho: Valgus stress (blow/twist)
sx: line tenderness, joint laxity
dx: MRI if major

mgmt: conservative, NSAID, RICE, PT → ±immobilizer/crutches → ortho for surgical reconstruction

Meniscus tear medial > lateral
patho: tear in fibrocartilage of joint
- acute → twisting injury (change in direction)
- chronic → degeneration + stress

sx: popping, locking, giving out
- duck waddle, McMurray, Apley grind

bakers cyst: synovial fluid effusion
dx: X-ray → edema. US → effusion. MRI → extent.
mgmt: RICE, NSAIDs, WBAT → refer to ortho ± arthroscopic repair

Knee dislocation
patho: loss of articulation of the tibiofemoral joint.
- high energy trauma

sx: deformity w/ edema, ecchymosis.
- careful skin and neurovascular exam → pulses, ABI, doppler

dx: Clinical
mgmt: ORTHO EMERGENCY → immediate reduction. Posteriorlateral needs open reduction

Patellar fracture
patho: fracture of kneecap due to direct blow or fall on knee
sx: effusion. Important to assess extension
dx: knee X-ray w/ Sunrise view
mgmt: immobilize → ortho

Patellar dislocation
epi: F>M. young athletes (<20yo)
patho: lateral displacement (w/ ligament injury)
sx: flexed, twisted/direct blow
dx: Clinical
mgmt: reduction → extend, pressure on lateral patella
- post reduction xray (AP, lat, sunrise)

Prepatellar bursitis
epi: jobs w/ prolonged kneeling
patho: trauma → inflammation
sx: soft, nontender globular lump
dx: aspiration, analysis, knee xray
mgmt: NSAID, RICE, brace/immobilize

Tibial Plateau Fracture lateral plateau common
patho: direct blow to knee or axial loading.
sx: trauma + knee pain + NWB. Foot drop (peroneal nerve)
dx: Xray knee → depression of proximal tibia. ± CT/MRI
mgmt: Ortho. Usually ORIF

Osgood-Schlatter disease
epi: 9-14yo w/ recent growth spurt and athletic involvement
patho: osteochondritis of tibia tuberosity. overuse injury due to repetitive strain, chronic avulsion
sx: gradual, achy, anterior knee pain. Pain reproduced w/ knee extension against resistant
dx: Clinical. X-ray appropriate
mgmt: conservative w/ quad stretching

ANKLE

SPRAIN

patho stretching, rupture of ankle ligament
- classify by location. Grade by function

clinical

grade 1	grade 2	grade 3
microscopic tears	complete ligament tear	complete ligament tear
mild edema/tenderness	moderate pain, edema, ecchymosis	severe pain, edema, ecchymosis
able to bear weight	Painful weightbearing	no weightbearing
no joint instability	↓ROM, Mild instability	joint instability
no immobilization	ACE ± airsplint x weeks	Splint vs. ACE ± airsplit vs Stirrup splint

diagnosis Clinical. rule of fracture if indicated

treatment RICE, NSAID, Crutches (2-3d)

OTTAWA ANKLE RULES

Ankle X-ray IF:

1. Pain in malleolar zone PLUS
   - bony malleolar tenderness OR unable to bear weight
2. Pain in midfoot PLUS
   - tender base of 5th OR unable to bear weight

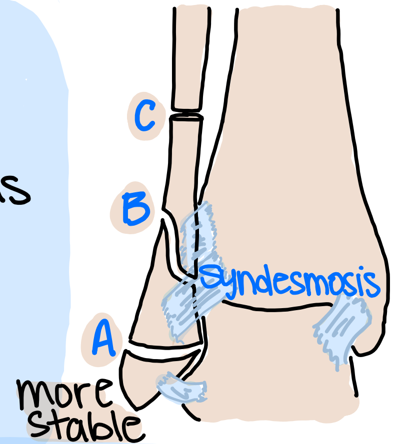
FRACTURES

patho distal tibia and/or fibula due to trauma
- Unimalleolar, bimalleolar, trimalleolar

clinical based on mechanism, pain, edema, ecchymosis

diagnosis 3V ankle x-ray. Ottawa Ankle rules
└ including oblique

treatment splint @ 90 degrees in posterior splint
crutches/no weight bearing
unstable fracture → ORIF



Maisonneuve Fracture

patho proximal fibular fracture as a result of syndesmoid disruption in the setting of malleolar fracture or deltoid ligament injury

diagnosis tib/fib or knee x-ray for any pt w/
1. mortise disruption or
2. proximal fibular tenderness

treatment fixation w/ syndesmotic screws and malleolar fixation

ANKLE DISLOCATION		ACHILLES TENDON RUPTURE
high speed MCV, sports, fall	epidemiology	Sports. Male. 30-40yo. quinolone use.
loss of articulation of distal tibia and talus. If posterior → plantarflexion during injury - commonly includes fracture	patho	recurrent microtrauma → tendinopathy sheer stress → rupture
Clinical	clinical	burning pain (relief w/ rest) · "pop" or feels stuck localized tenderness. crepitus · + thompson (Plantarflex absent)
	diagnosis	xray → hagland's deformity · POCUS
Ortho. closed reduction. Posterior splint. ±ORIF	treatment	posterior splint plus → RICE, NSAID, taping operative/non heal same · chronic → PT

FOOT

TRAUMATIC INJURIES

① Talus Fracture
epi: uncommon. MVC. Snowboarders
patho: axial loading force at ankle
sx: hx fall from height. high-energy trauma
- neurovascular

dx: 3V ankle. CT in negative but ↑suspicion
mgmt: urgent ortho eval due to AVN risk
emergent if open, NV compromise
- splint, NWB, analgesia

② Jones Fracture
patho: fracture of proximal 5th metatarsal usually due to vertical or mediolateral force when plantarflexed
sx: pain on lateral side of foot. Tender to base of 5th metatarsal
dx: 3V foot
mgmt: posterior splint, NWB, RICE, analgesic, ortho FU
open/NVC → emergent referral

③ Stress Fracture
epi: athletes, military, dance, obesity
- female athlete triad

patho: repetitive stress to forefoot from WB activities → metatarsal shaft fracture
sx: axial load elicits pain. Point tender.
dx: Clinical. xray may be normal
- MRI and bone scan confirm

mgmt: RICE, acetaminophen, post-op shoe

④ Lisfranc injury
epi: rare. MVCs, falls, footwear
patho: disruption of tarsometatarsal joint due to injury
sx: plantar ecchymosis, midfoot instability → pathognomonic
dx: 3V foot → WB xray → CT or MRI definitive
mgmt: boot/splint, RICE, NWB
- often ORIF and long recovery (12w)

ATRAUMATIC INJURIES

① Planter fasciitis
epi: common
patho: unknown. degeneration, proliferation, chronic inflammation
sx: pain in inferior heel worse w/ walking
- worse in morning

PE → elicit pain by palpating fascia while dorsiflex
dx: Clinical
mgmt: weight mgmt. Heel/arch support.
- RICE, NSAID, steroid injection, plantar stretching
- 1yr of sx → surgical release

② Tarsal tunnel syndrome
patho: compression of tibial nerve as it passes under transverse tarsal ligament
causes: scar tissue, overuse, tight shoes
sx: ache, burn, numb at medial sole
- worse as day progresses, when dorsiflexed

dx: tinel sign over posterior medial malleolus
sensory loss over plantar surface
mgmt: NSAID → steroid injection → Surgery

③ Hallux valgus
patho: lateral deviation of hallus on first metatarsal (bunion)
causes: footwear
sx: pain, deformity
dx: Clinical
mgmt: low heel, wide shoes. Orthotics.
- surgical if conservative fails

④ Morton's Neuroma
epi: F>M. 25-50yo
patho: proliferation or degeneration of an interdigital nerve.
- possibly due to tight footwear

sx: burning pain between 3rd/4th metatarsal worse w/ ampulation
- palpable mass, tender

dx: MRI or US
mgmt: low heel, wide shoe → injection → surgery