
MS
APPLIED
RADIOLOGY

Summary Table of XRs

Region *(Lines)*	Orthogonal Sets	Special Views
Shoulder ***(Moloney's Arch)***	AP/ Axial	Y-Scapula, Velpeau Zanca (ACJ)
Humerus	AP/ Lateral	
Elbow ***(Anterior Humeral, Radiocapitellar Lines)***	AP/ Lateral	Greenspan (Radial head) Internal Oblique (Lateral Condyle #)
Forearm	AP/ Lateral	
Wrist ***(Gilula Lines, Radial Parameters)***	PA/ Lateral	Scaphoid Carpal Tunnel
Hand	PA/ Lateral/ Oblique	
Finger	PA/ Lateral/ Oblique	
Pelvis ***(Acetabular Lines)***	AP	Inlet/ Outlet Iliac/Obturator Oblique
Sacroiliac Joint	AP Sacrum lateral	

Region *(Lines)*	Orthogonal Sets	Special Views
Hip ***(Shenton's Line)***	AP/ Lateral	
Femur	AP/ Lateral	
Knee	AP/ Lateral (Weight bearing for OA)	Skyline (PFJ) Rosenberg (Medial Joint Space) Long Leg (Mech axis)
Tibia	AP/ Lateral	
Ankle	AP/ Lateral/ Mortise	
Foot	AP/ Lateral/ Oblique	Harris, Broden's (Calcaneum)
Toes	AP/ Lateral/ Oblique	
Cervical Spine ***(4 Lines for alignment)*** ***(Retropharyngeal Swelling 2-6-6-2)***	AP/ Lateral	Open mouth (C2) Swimmer's (C7) Flexion/ Extension
Lumbar Spine	AP/ Lateral	Flexion/ Extension

Approach to **Fracture** XR

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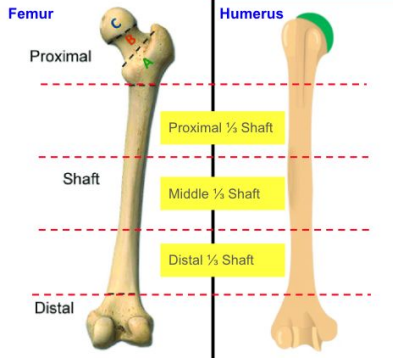
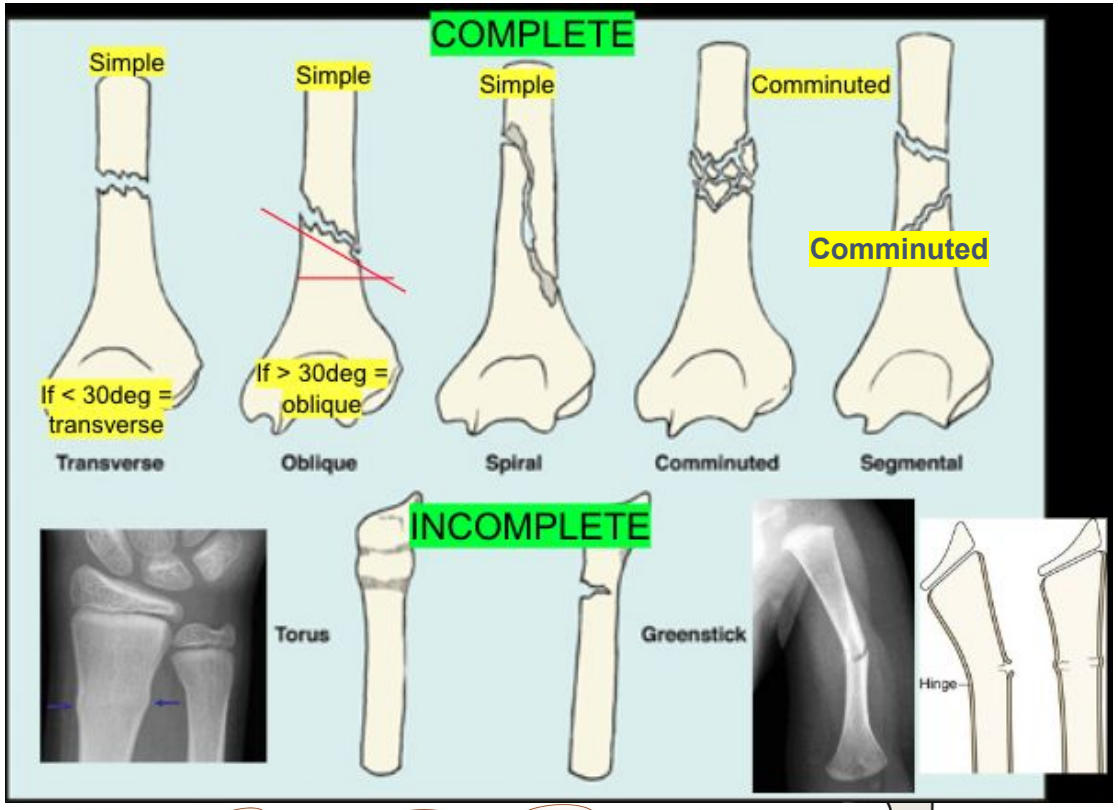


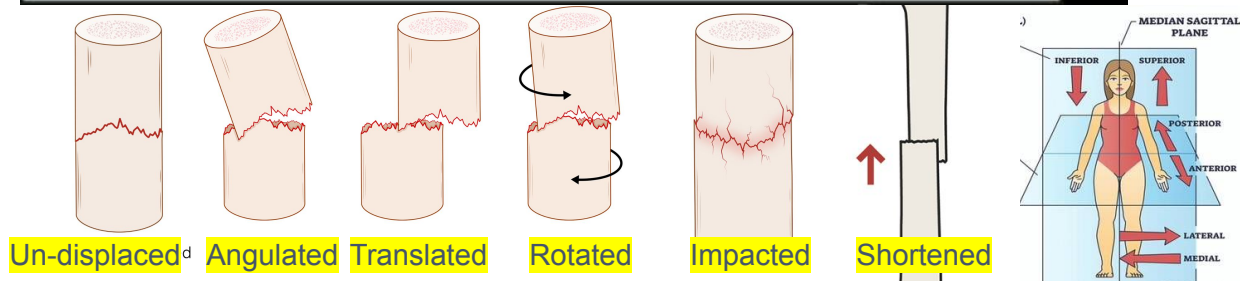
0. Primer [Think of the principles]
- XR of what?
- Skeletally mature?
- 2 views?

1. What Bone is fractured? Location of fracture?
- Proximal (intra/ extra-articular)/ Shaft (further by thirds)/ Distal (intra/ extra-articular)
- OR Special anatomical names
  - E.g. UL - Supracondylar #, Lateral condyle #, Medial condyle #, Olecranon #...
  - E.g. LL - Neck of femur #, Intertrochanteric #, Subtrochanteric #, Tibia plateau #, Pilon #…

2. What is the Pattern of fracture?
- Complete/ Incomplete? [Is fracture through and through?]
  - Complete - what pattern?
    - Simple - Transverse/ Oblique/ Spiral
    - Comminuted/ Segmental
  - Incomplete - What pattern? (think paeds)
    - Torus/ Greenstick

3. Displaced or Undisplaced? (Look for Lines or Symmetry)
- Undisplaced = lines not disrupted
- Displaced = Lines disrupted
  - Type of displacement?
    - Translated/ Angulated/ Rotated/ Shortened/ Impacted
  - What direction is it displaced?
    - Reference from distal fragment
    - Anterior/ Posterior/ Medial/ Lateral





Approach to **Dislocation** XR

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0. Primer [Think of the principles]

- XR of what?
- Skeletally mature?
- 2 views?

1. What Joint is dislocated?

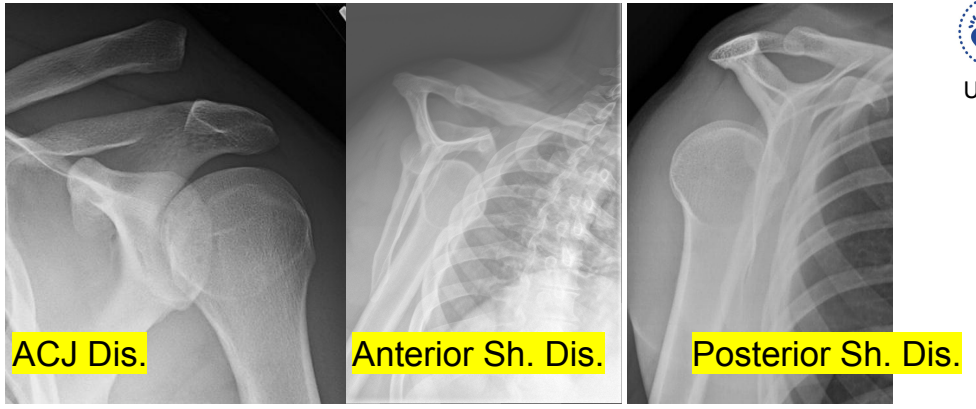
- Try to be specific

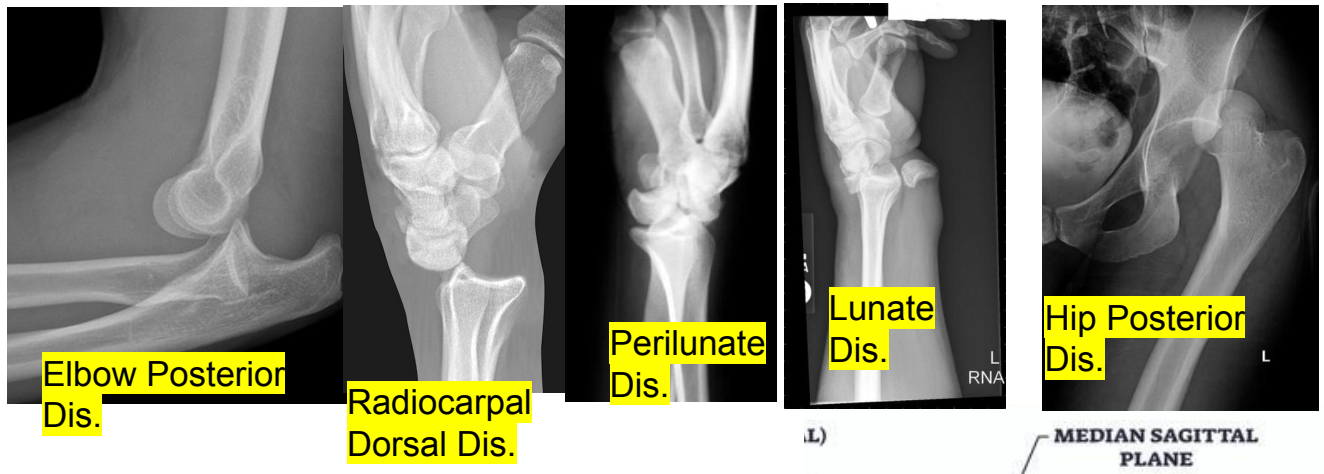
2. What is the Pattern?

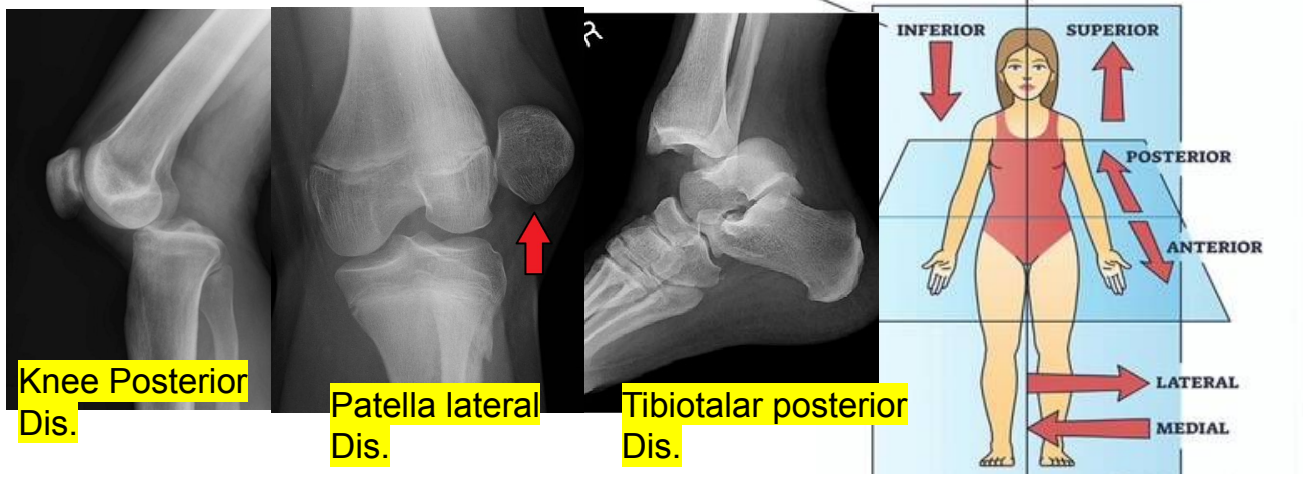
- Simple = no fracture
- Complex = Fracture- dislocation
  - What is fractured?...

3. What direction is it displaced?

- Use your lighthouse.
- Shoulder - Coracoid
- Wrist - Ulnar styloid
- Elbow - Radial head
- Knee, Ankle - Fibula







Approach to **Arthritis** XR

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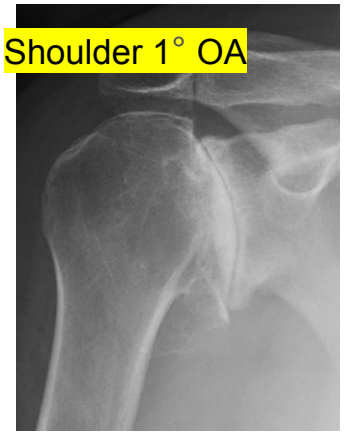
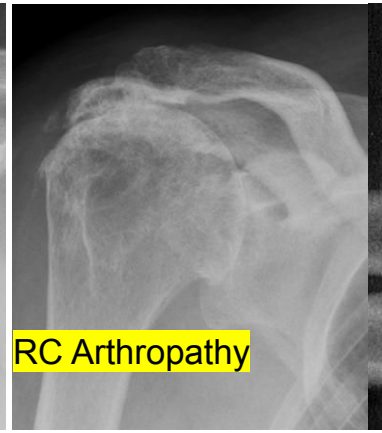
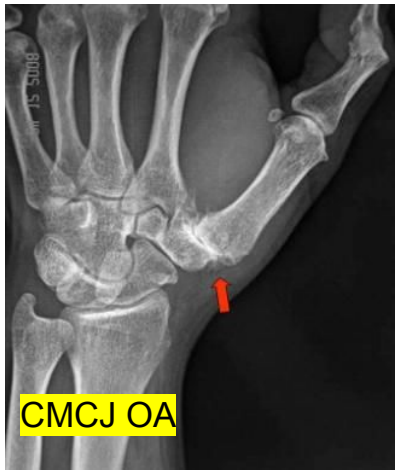
0. **Primer [Think of the principles]**
   - XR of what?
   - ~~Skeletally mature?~~
   - 2 views?
1. **What Joint is Degenerated?**
   - Try to be specific
2. **What are the features of arthritis?**
   - **L** - Loss of Joint Space
   - **L** - Loose bodies
   - **O** - Osteophytes
   - **S** - Subchondral sclerosis
   - **S** - Subchondral cysts
3. **Any obvious deformity? e.g.**
   - Knee/ Ankle - Varus/ Valgus
   - Shoulder - superiorly displaced
   - Hip - Collapse of femoral head

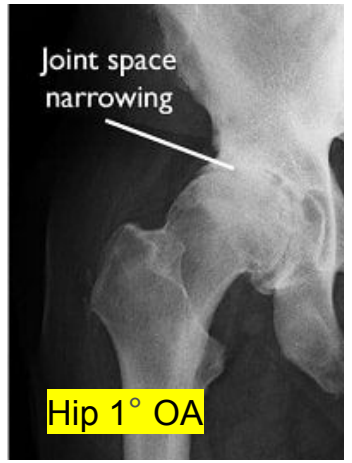

Shoulder 1° OA


RC Arthropathy

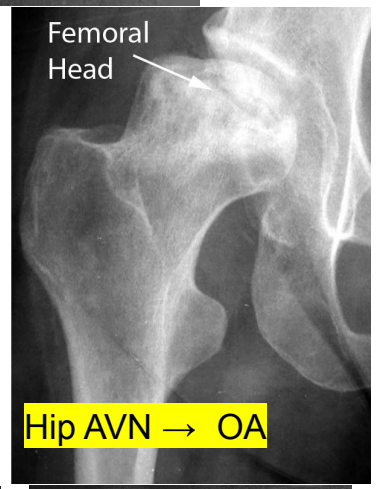

Elbow OA


Wrist OA


CMCJ OA



Hip 1° OA



Hip AVN → OA

Knee OA


Ankle OA


Hallux Rigidus

Approach to **Tumor** XR

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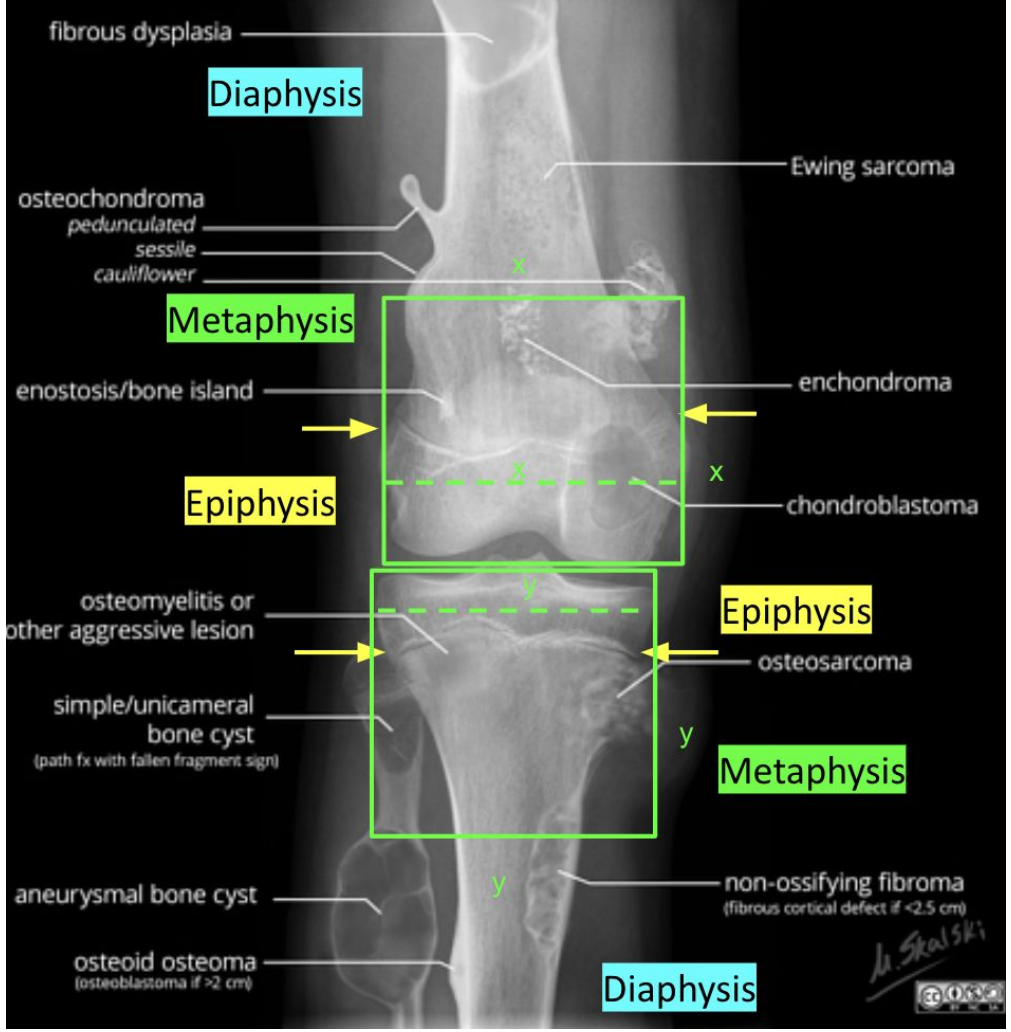
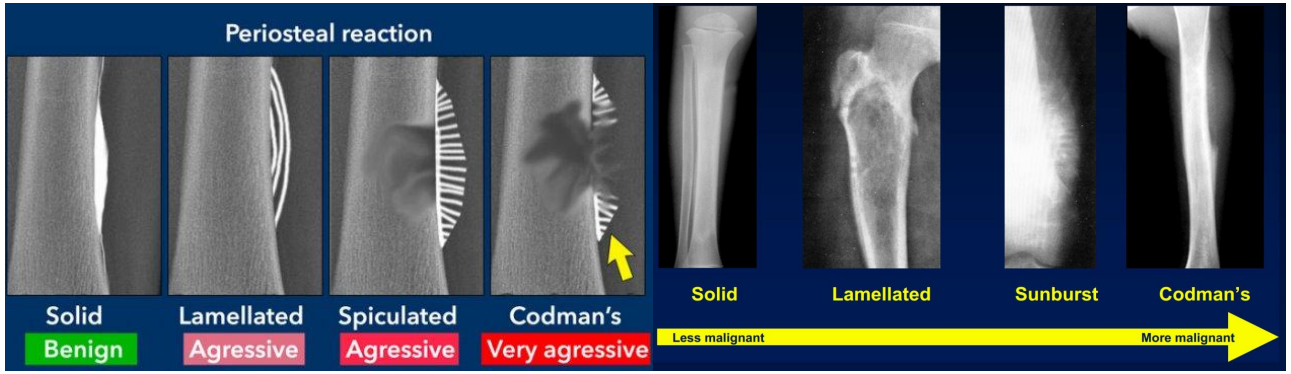
0. **Primer [Think of the principles]**
   - XR of what?
   - Skeletally mature?
   - 2 views?
1. **Where is the lesion?**
   - Epiphysis (only in immature skeleton)
   - Metaphysis (Müller Box)
   - Diaphysis
   - In the Middle? “Meta-diaphyseal/ Epi-metaphyseal”
2. **What is the Zone of Transition?**
   - **Wide zone** of transition aka "Diffuse", “Poorly-demarcated” = Implying malignant
   - **Narrow zone** of transition aka "Well-demarcated" = Implying benign
     - **"Expansile"** - Specific for ABC
3. **Is there Periosteal Reaction?**
   - Usually seen in lesions with a wide zone of transition (malignant)
   - Reflects rate of growth = Solid < **Onion Skinning**/ Lamellated < **Sunburst**/ Spiculated < **Codman's Triangle**
4. **What is the Matrix?**
   - **Lytic** = bone eaten away
   - **Blastic** = new bone laid down
   - “Ground-glass” = Bone replaced by fibre
   - “Rings and Arcs/ Popcorn”→ Bone replaced by cartilage





Approach to **Advanced Imaging**

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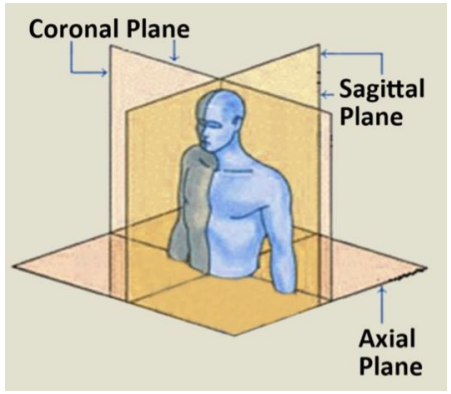
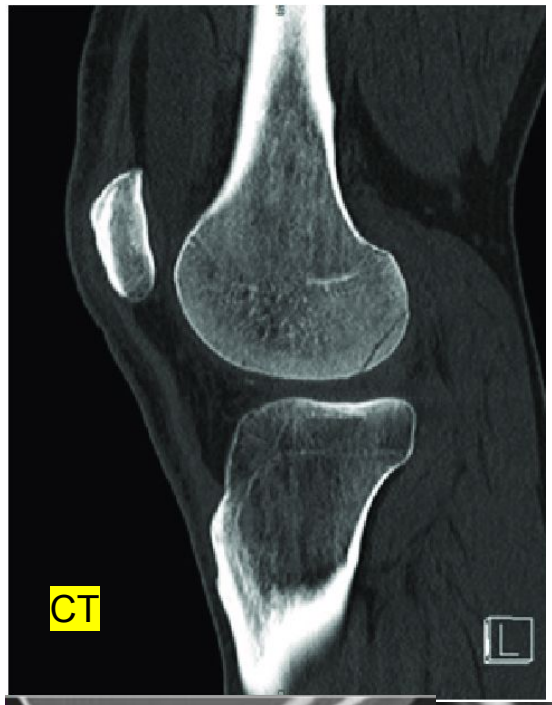
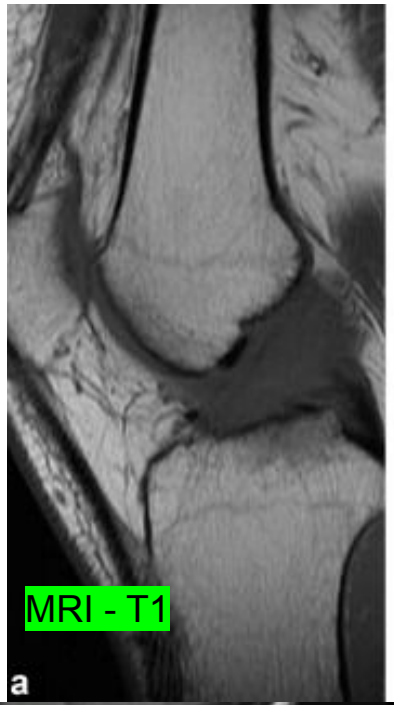
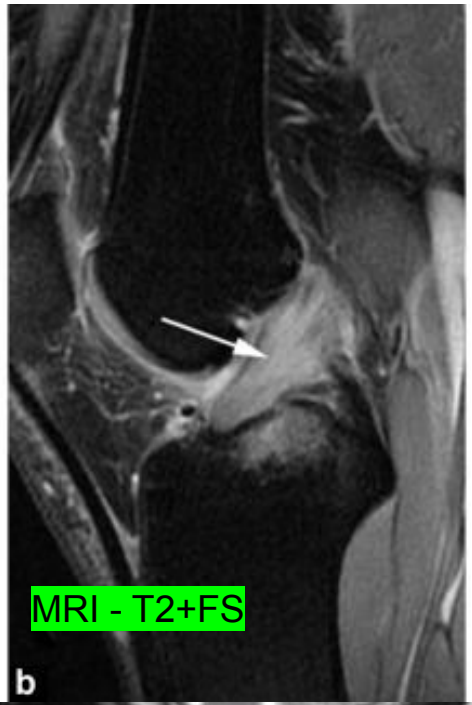
1. **What scan is this?**
   - **CT scan** - note the lack of soft tissue definition
   - **MRI scan**, What Sequence?
     - **T1** = Only Fat *(Subcutaneous fat, fatty bone marrow)* is Hyperintense ("white")
     - **T2** = Fat & Water *(Joint fluid, CSF fluid)* are Hyperintense
     - **T2 + Fat Suppressed** = Only Water is Hyperintense
2. **What body part is this?**
3. **What view is this?**
   - Sagittal/ Axial/ Coronal?
4. **What is the abnormality?**



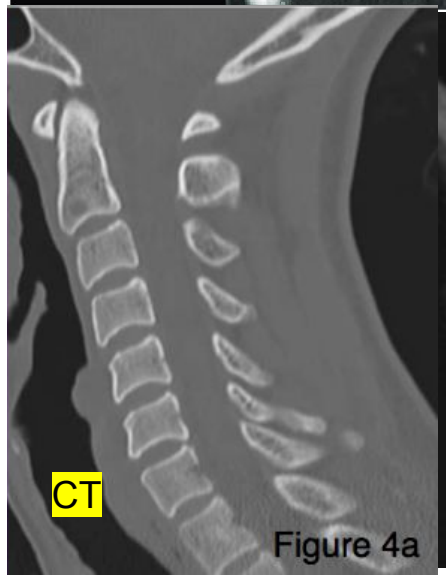


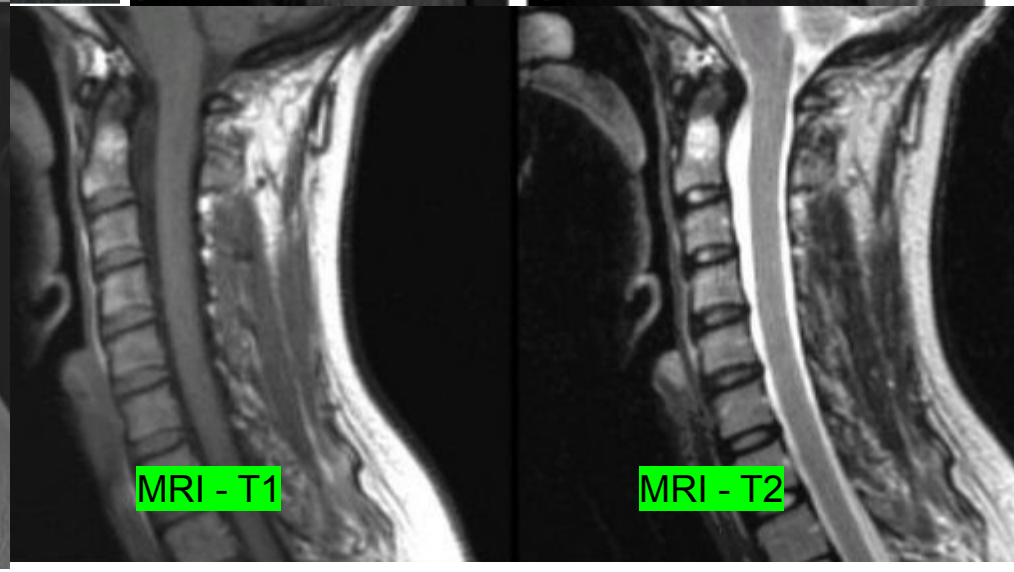


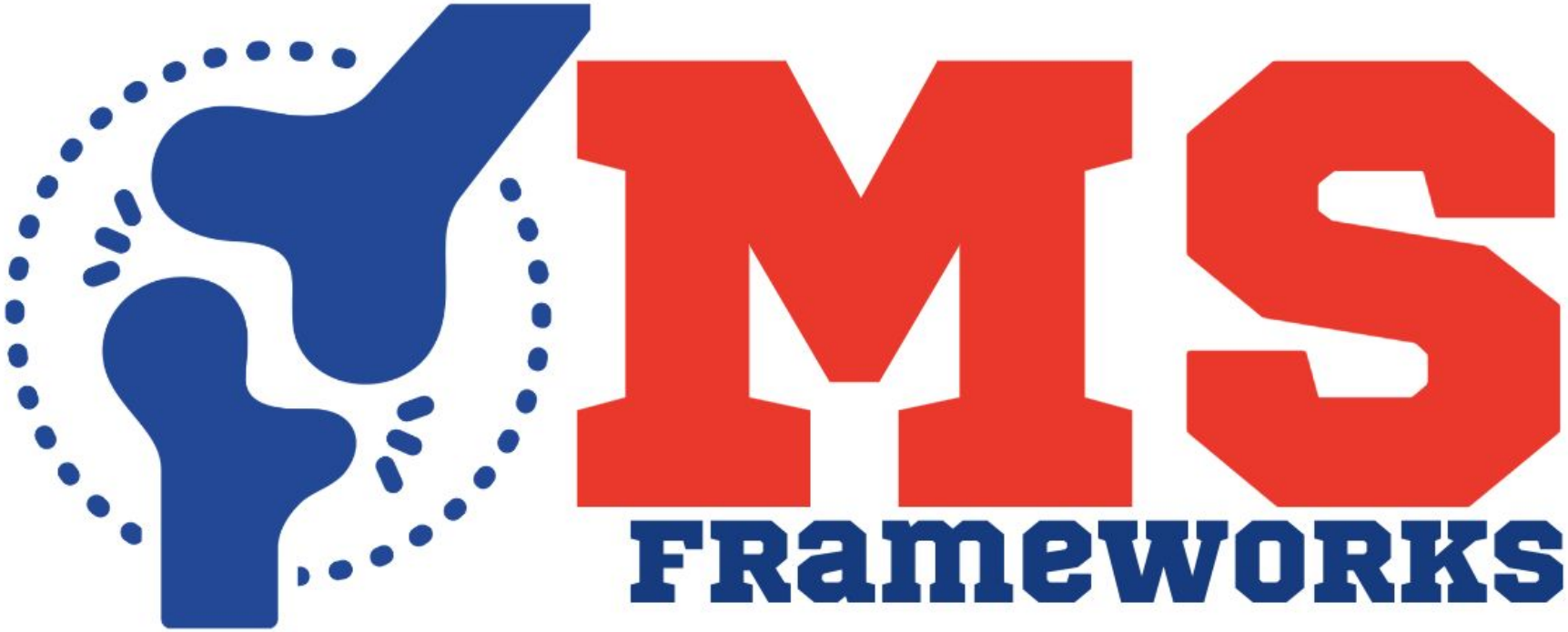


When to order which?

- ***[Trauma]*** XR can see fracture near joint (think proximal or distal) → **CT scan** for better evaluation/ planning
- ***[Trauma]*** XR no fracture → **MRI scan** to look for soft tissue injury/ occult fracture
- ***[Chronic Pain]*** XR no arthritis/ long duration of pain →**MRI scan** to look for soft tissue injury
- ***[Chronic Pain]*** Certain joint replacements e.g. robotic TKR, Shoulder Replacement → **CT scan** for pre op planning
- ***[Infection and Tumor]*** **MRI with contrast** (if no contraindications)



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FRAMEWORKS

Ortho Made Simple - Trauma Framework

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Legend: Isolated Closed Trauma/ Polytrauma/ Spine Trauma/ Open Fractures

1. Stabilize

- ***ATLS*** Principles - ABC
- Polytrauma - expecting the worse
  - Reduce Pelvic Volume = Pelvic binder/ C-Clamp
  - Prevent spinal cord injuries = C-collar and spinal nursing
- Spine Trauma
  - Immediate application of C-collar and institute spinal nursing
- Open fractures
  - Intramuscular Anti-Tetanus Toxoid (IM ATT)
  - Immediately start IV ***Prophylactic*** Antibiotics (IV Cefazolin; if allergic give IV Clindamycin)
  - If presence of biocontamination
    - Marine - + doxycycline [Vibrio]
    - Freshwater - + Cipro [Aeoromonas]
    - Soil/ Faeces - + Flagyl [Anaerobes]

2. History

- **General History (for all patients)** - Biodata, PMHx, Smoking, Drinking, Drug Allergy, Occupation, Sports, Handedness (UL)
- **Condition History**
  - Mechanism of injury - ***"Mechanical Fall"***
  - Ask red flags such as ***"Prodromal Pain"***
- **Risk Factor History**
  - Osteoporosis in elderly
  - Other PMHx that can result in frequent falls, brittle bones
- Polytrauma
  - "AMPLE" history - Allergies, Medications, Past medical history, Last meal or other intake, and Events

3. Physical Exam

- Check for ***open fracture***
- Check ***neurovascular (NV) status***
  - Be specific how you check and what nerve/ vessel.
    - UL = MUR nerves, Radial Pulse
    - LL = Foot drop, DP and PT Pulses
- Check for ***compartment syndrome*** (even for Open fractures)
  - Especially for fractures at risk e.g., tibia plateau, shaft, pilon fractures.
  - Watch for 6Ps, "Pain!". Mx = remove back slab, do not elevate, Fasciotomy
- ***Secondary Survey*** "head to toe" for other injuries - facial, chest, pelvic compressions, long bones.
- Polytrauma/ Spine Trauma
  - Log roll with in-line traction
  - Use ASIA score for neurological exam
  - DRE TRO cauda equina syndrome

4. Initial Investigations

- ***Imaging***
  - ***Orthogonal*** views, "one joint above, one joint below"
  - Full length of fractured bone
  - Special XR views
  - Polytrauma
    - XR Trauma Series - C-spine Lateral, CXR, Pelvis AP
    - CT - CTTAP, CT Brain, CT Cervical spine
- ***Bloods*** (only when for admitted)
  - ***Pre-Op Bloods*** - FBC, RP, PT/INR, GXM, ECG, CXR
  - ***Risk Factors*** - Vit D, Ca Pnel, TFT, LFT osteoporosis)
  - Polytrauma ***Stability*** - Lactate, ABG

5. Acute Management

- ***Address Pain*** = ***Analgesia*** as per WHO pain ladder [ALL]
- ***Address Fracture***
  - ***Manipulation and Reduction*** under sedation
    - *Not all injuries require this
  - ***Temporary Stabilization***
    - See annex for options. May need Ex Fix.
    - Polytrauma - Remove pelvic binder where necessary
    - Polytrauma/ Spine - C-collar & spinal nursing
  - ***Re-check*** NV after MnR and Temp Stabilization
- **Monitor for and Prevent Important Complications**
  - **Compartment syndrome**
  - **Deep Vein Thrombosis** when NWB esp. in elderly hip fractures - Pharmacological and Non-P
- Polytrauma - Early Appropriate Care (EAC) in 3 phases
  - Phase 1: 1st Surgery - Damage Control with Ex fix
  - Phase 2: Stabilize Physiologically in ICU/ HD
- Open fracture
  - Address ***Wound*** - take pic, moist dressing.
  - Address ***Fracture*** - as above
  - ***Inform*** Ortho senior for 1st Surgery - Debride wound, negative pressure dressing, KIV Ex Fix

6. Advanced Imaging

- ***CT scan***
  - Indicated when XR shows fracture near a joint = "periarticular fracture"
  - Useful for surgical planning and 3D reconstruction
- ***MRI scan*** without contrast
  - Indicated when XR is normal
  - Concerns of soft tissue injury (meniscus, cartilage, ligaments) or occult fracture
- MRI scan ***with contrast***
  - Concerns of tumor/ infection
- Spine Trauma
  - MRI whole spine to look for ***contiguous*** fractures, epidural hematomas
  - CT spine for fracture pattern and surgical planning

7. Definitive Management

- ***"Operative vs Non-Operative"*** depending on
  - **Patient** factors e.g. Co-morbids, function.
  - **Injury** factors e.g. Classification e.g. Spine Trauma TLICS, SLICS score
  - **Surgeon** factors e.g. choice of implants influenced by surgical training
- ***Non-Operative***
  - Continue immobilization until fracture healing (Convert back slab to full cast)
- ***Operative***
  - Closed or Open Reduction
  - With internal fixation - screws, plates, nails, wires → Dependant on each injury
  - If peri-articular fractures → Fix vs Replace
- Polytrauma - Early Appropriate Care (EAC) in 3 phases
  - Phase 3: 2nd Surgery - Definitive fixation
- Open fractures - Typically 2 Phases
  - 2nd Surgery - Internalization of fixation and achieve wound coverage with skin **graft** or **flap** *(Difference in blood supply)* if required.

8. Post Op Review

- Assess **patient**
  - Stability and vitals
  - GA Complications
- Assess **operated limb/ site**
  - Dressings - ensure not soaked
  - Chart drain outputs (be specific)
  - Distal neurovascular
- Follow **Post Op instructions** for:
  - IV Antibiotics for ***Prophylaxis***
  - Analgesia as per WHO
  - ***DVT prophylaxis***
  - Weight bearing status
  - Range of motion
  - STO timing - usually 14 days
- Subsequent ***Multidisciplinary*** team to optimize outcomes
  - Rehab - PT/ OT, Rehab Med
  - Social - MSW, CH, TCF
  - Polytrauma - Psych for PTSD

Temp. Stabilization for UL Trauma

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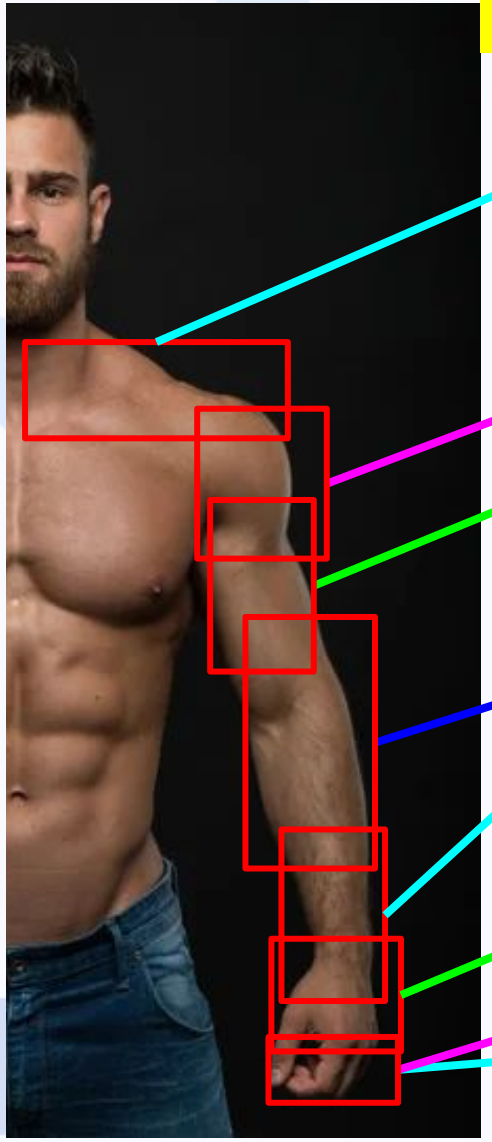
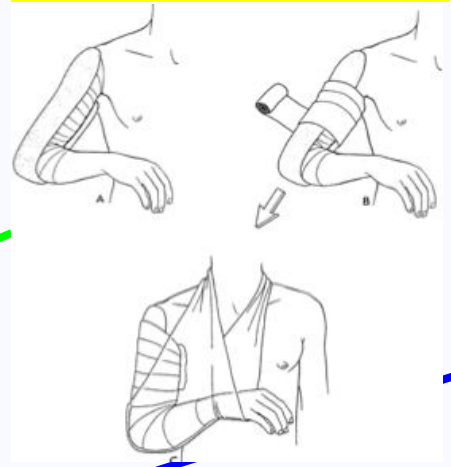


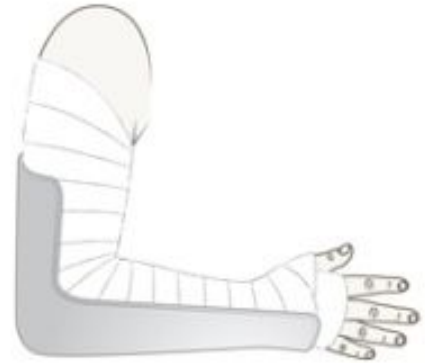
Arm Sling
E.g. Clavicle #, GHJ dislocation, ACJ Dislocation

Collar and Cuff
E.g. Proximal Humerus #

U-Slab
E.g. Humeral Shaft #



Above Elbow Backslab
E.g. Distal humerus #, Elbow dislocation, Other elbow #, Forearm shaft #



Below Elbow Backslab
E.g. Distal Radius #

Intrinsic Plus Splint
Ulnar Gutter Splint
Thumb Spica Splint
E.g. Metacarpal #

Buddy Splint
E.g. Prox, Middle Phal. #

Zimmer Splint
E.g. Middle, Distal Phal. #

Temp. Stabilization for LL Trauma

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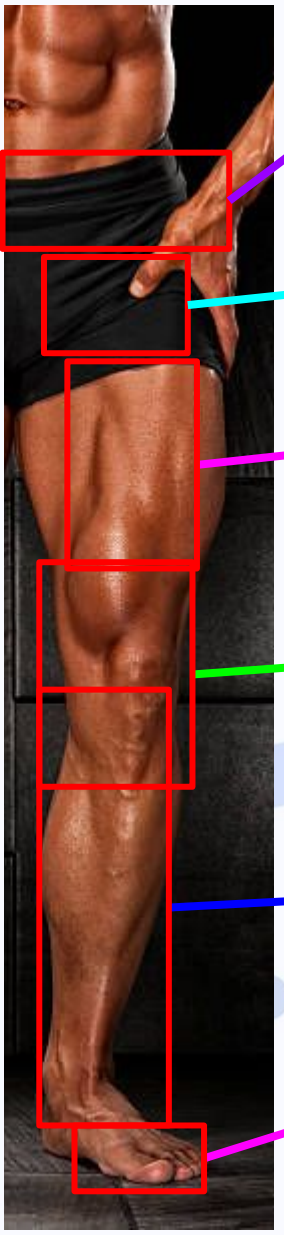
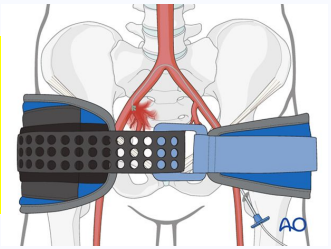
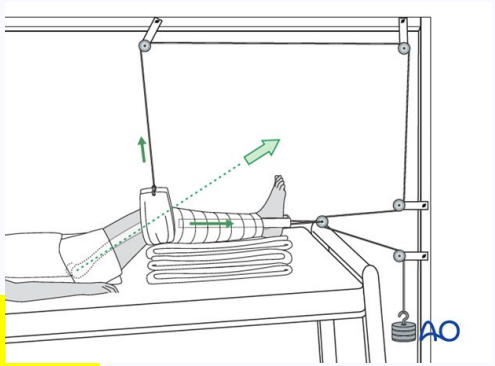


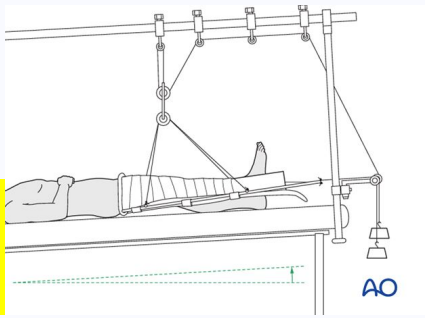
Pelvic Binder
E.g. Specific Pelvic fractures e.g. open book



Traction/ Bed Rest
E.g. Proximal Hip fractures

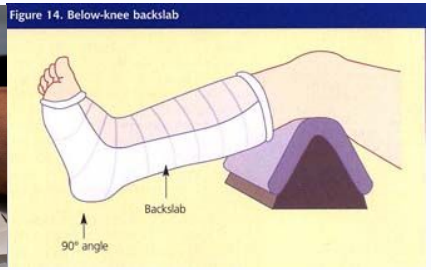


Thomas Splint
E.g. Femur Shaft #

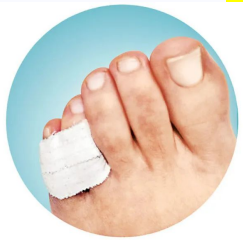


Above Knee Back Slab
E.g. Distal Femur #, Patella #, Proximal Tibia #

Below Knee Backslab
E.g. TIbia Shaft #, Distal Tibia #, Ankle #, Foot fractures other than phalanges



Buddy Splint
E.g. Toe Middle, Proximal phalanges #



Ortho Made Simple - Chronic Pain/ Arthritis Framework

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Legend: Joints/ Cervical Spine/ Lumbar Spine

1. Stabilize

- Usually not required

2. History

- General History (for all patients) - Biodata, PMHx, Smoking, Drinking, Drug Allergy, Occupation, Sports, Handedness (UL)
- Condition History
  - Pain (SOCRATES) - Mechanical vs inflammatory type of pain
  - Joint Specific Symptoms - e.g.,
    - Knee locking, instability
    - Shoulder - instability, stiffness, weakness
    - Cervical S.- myelopathy, radiculopathy
    - Lumbar S. - claudication (vas vs neuro), radiculopathy
  - Red flags
    - *Tumor* red flags - LOW, LOA
    - *Infection* red flags - fever, night sweats
    - *Spine*- PU BO
  - Function - Home, Occupation, Community, Recreation
- Risk Factor History
  - Previous Trauma
  - Condition risk factors e.g., Hip - AVN; Frozen shoulder - DM

3. Physical Exam

- Specific Joint examination
- Always check distal *neurovascular* status

- Cervical Spine
  - Look for *myelopathic* features
  - Look for *radiculopathy*

- Lumbar Spine
  - Look for *radiculopathy*
  - Check LL pulses (TRO vascular claudication), offer DRE TRO cauda equina

4. Initial Investigations

- Imaging
  - *Orthogonal* views
  - Features - *LLOSS*
  - Special XRs e.g.Knee - Weight bearing XR, skyline
- *Bloods* (if concerned inflammatory/ infection)
  - Inflammatory - CRP, ESR, RF, Anti-CCP
  - Infection - FBC, CRP, ESR

- Cervical and Lumbar Spine
  - *Flexion Extension XR* views (dynamic instability)
  - MRI scan at first consult if significant neurology

5. Initial Management

"What will you do at the first consult?"

- ***Pharmacological***
  - Analgesia as per WHO pain ladder

- ***Non-pharmacological***
  - Lifestyle modifications - change sports
  - ***Multidisciplinary*** - Physiotherapy, Podiatry
  - Walking aids

For many patients, this ends up being the definitive management as their symptoms improve.

6. Advanced Imaging

- Typically, not required if there are obvious OA changes on XR

- Consider ***MRI scan without contrast*** if
  - Normal XR with significant/ long duration of symptoms, concern of soft tissue injury (cartilage, meniscus, ligaments, muscles)

- ***MRI scan with contrast*** if concerns of tumor/ infection
- ***CT scan*** typically only for pre-op planning for complex replacements

- Cervical and Lumbar Spine
  - Consider order ***MRI scan*** at first consult if significant neurology/ myelopathic features
  - C-Spine - ***CT scan*** if for op to look for OPLL as cause of myelopathy
  - L-Spine - ***CT scan*** if for op for surgical planning (e.g., length of pedicle screws)

7. Definitive Management

- ***"Operative vs Non-Operative"*** depending on
  - **Patient** factors e.g. Co-morbids, function.
  - **Disease** factors e.g. Classification, Severity (e.g. Spine - ***NID*** - Neurology, Instability, Deformity)
  - **Surgeon** factors e.g. implants, training
- ***Non-Operative***
  - Analgesia, PT, Injections, Other adjuncts
  - Cervical and Lumbar spine - Nerve root injections for radiculopathy
- ***Operative*** options - Know common options for OA of each joint - Joint Preserving or *Joint Sacrificing* - E.g.
  - Shoulder - *TSA, RTSA*
  - Elbow - *TEA*
  - CMCJ - *Fusion, Excision (Trapeziectomy)*
  - Hip - *THA*
  - Knee - HTO, *UKA, TKA*
  - Ankle - Osteotomy, *TAR, Fusion*
  - Hallux Valgus - Osteotomy, *Fusion*
  - Spine - Decomp, *Fusion, ADR*

8. Post Op Review

- Assess **patient**
  - Stability and vitals
  - GA Complications
- Assess **operated site**
  - Dressings - not soaked
  - Chart drain outputs
  - Distal NV (be specific)
- Follow **Post Op instructions** for:
  - IV Antibiotics for ***prophylaxis***
  - Analgesia as per WHO
  - DVT ***prophylaxis***
  - Weight bearing status
  - Range of motion
  - STO- usually 14 days
- Subsequent ***Multidisciplinary*** team to optimize outcomes
  - Rehab - PT/ OT, Rehab Med
  - Social - MSW, CH, TCF

Ortho Made Simple - Infection Framework

Updated Sept 2024
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Legend: Soft Tissue Infection/ Osteomyelitis/ Mono-arthritis/ Necrotizing Fasciitis/ Peri-implant infection

1. Stabilize

- Resuscitate patient if in ***septic shock***

- Necrotizing Fasciitis
  - Start ***empirical*** triple antibiotics immediately - IV Benzylpenicillin, Ceftazidime, Clindamycin

2. History

- **General History** (for all patients) - Biodata, PMHx, Smoking, Drinking, Drug Allergy, Occupation, Sports
- **Condition History**
  - **Severity** of infection - Pain (SOCRATES), duration, systemic symptoms
  - **Source** of infection - direct inoculation/ hematological from other sites
  - Peri-implant infection - ask about previous surgery - when? Had infection?
- **Risk Factor History**
  - DM, PVD, Immunosuppression

3. Physical Exam

- **Condition** Examination
  - Local severity
    - Extent of collection
    - Involvement of adjacent joint (septic arthritis)
    - Special signs e.g., Kanavel's signs for finger
  - Systemic severity
    - Vitals; chills and rigors
- **Risk Factors** Assessment
  - Diabetic Dermopathy, peripheral neuropathy
  - Poor pulses (peripheral vascular disease)

4. Initial Investigations

- Imaging
  - ***Orthogonal*** views
  - To look for ***osteomyelitis***
  - Peri-implant - Look for loosening
- Bloods
  - ***Pre-Op*** Bloods - FBC, RP, PT/INR, GXM, ECG, CXR
  - ***Severity*** - FBC, CRP, ESR, Blood c/s if febrile
  - ***Stability*** - Lactate, ABG
  - ***Risk factors*** - HBA1c, Arterial studies
- Special
  - **Wound swab** c/s if open, infected wound (not always necessary)
  - Mono-arthritis: **Joint aspiration**
    - ***"Therapeutic and diagnostic"***
    - **Gram stain**, **cell count**, crystals, cultures (bacteria, fungal, AFB)
    - Peri-implant Joint Replacement infection - **Aspiration in OT**

5. Acute Management

- ***Analgesia*** as per WHO pain ladder
- Diet - Keep ***NBM*** or as per discussion with senior, depending on OT availability
- ***Empirical*** Antibiotics (in certain simple soft tissue infection, can be started without c/s)
- Mono-arthritis
  - Post aspiration - "NBM until gram stain, cell count results out"
  - ***Empirical*** Abx ONLY after c/s taken!
- Necrotizing Fasciitis
  - Inform senior immediately for urgent surgical debridement and ***fasciectomy***
- Peri-implant infection
  - ***Empirical*** Abx ONLY after c/s taken!

** If infection is superficial, patient may be discharged with antibiotics and follow up.*

6. Advanced Imaging

- Most do not need advanced imaging. But ***MRI scan with contrast*** can be considered if:
  - **Unsure** if infection - e.g., differentiating acute Charcot's vs Osteomyelitis
  - **Delineate** extent of infection for surgical planning
  - **Evaluate** adjacent joints for septic arthritis
- Necrotizing Fasciitis
  - This is a ***clinical diagnosis***; MRI should not delay op.
- Peri-Implant Infection can consider
  - ***CT scan*** to evaluate for union
  - ***MRI with contrast*** to evaluate for deep collections

7. Definitive Management

- ***"Operative vs Non-Op"*** depending on
  - **Patient** factors e.g. Co-morbids
  - **Disease** factors e.g. Severity
- **Non-Operative (Rare)**
  - Long term antibiotic suppression
- **Operative general options**
  - ***Debridement*** (= removal of unhealthy tissue)
    - ***Incision and drainage*** for abscess
    - ***Saucerization*** for carbuncles
    - ***Amputation*** - DDD
  - Osteomyelitis - debridement of infected bone/ amputation
  - Septic Arthritis - joint washout
  - Necrotizing Fasciitis - multiple debridement till clean/ amputation
  - Peri-implant - Debride/ Revision

8. Post Op Review

- Assess **patient**
  - Stability and vitals
  - GA Complications
- Assess **operated site**
  - Dressings - ensure not soaked
  - Chart drain outputs
  - Distal neurovascular (be specific)
- Follow **post Op instructions** for:
  - Continue ***empirical*** antibiotics
  - Trace post-operative cultures and convert to ***culture directed antibiotics***
    - May need **multidisciplinary** ID on board for PICC, OPAT.
  - Analgesia as per WHO


MS
PHYSICAL EXAM

Ortho Made Simple - Shoulder PE

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1. Inspection

- Expose Patient ***(Must offer)***
- **Walk around patient**
  - Front - be deliberate to look for asymmetry
  - Sides
  - Back - for wasting of Rotator cuff muscles
- In general, look for scars, deformity, swellings, erythema, wasting

2. Range of Motion

- Stand in front of the patient and ask patient to follow you. **Compare both sides**
  - Flexion
  - Abduction
  - External Rotation - tuck elbows in
  - Internal Rotation - using thumb to compare level
- **If any AROM limited, check PROM**

* No need to check extension

3. Palpate

- 4 Bony Prominences
  - Sternoclavicular Joint
  - Along Clavicle
  - Acromioclavicular Joint
  - Spine of Scapula
- 2 Soft tissue
  - Rotator Cuff Muscles (~ 1 cm distal to acromion)
  - Biceps Tendon in groove (optional)

* Palpate only the affected side unless asked to compare

4. Power

- Rotator Cuff Muscles. **[Compare both sides]**
  - Supraspinatus - Empty can test (flex shoulder to 90, in plane of scapula)
  - Infraspinatus - External rotation against resistance
  - Subscapularis - Belly Press (check one side at a time)
  - Teres Minor - Hornblower ***[Post grad]***
- Biceps (double as special tests while look for pain in bicipital groove) **[Do affected side only]**
  - Speed's
  - Yergason's

5. Special Tests

[Do affected side only unless asked to compare]

- Rotator Cuff Impingement
  - Neer's
  - Hawkin's
- Acromioclavicular Joint Pathology
  - Scarf's Test
- SLAP Tears ***[Post Grad]***
  - O'Brien's Test
- Instability Tests ***[For young patients with no positive exam findings so far, consider shoulder instability as a likely diagnosis.]***
  - Sulcus
  - Anterior Apprehension
  - Beighton's (> 5 is +ve in adults)

6. Neurovascular

- Radial pulse

- Median nerve - OK sign
- Ulnar nerve - criss cross fingers
- Radial nerve - thumbs up

7. Function (if asked)

- Touch Hair
- Touch Mouth
- Touch back pocket

8. Complete/ Offer

- Can offer to examine Cervical spine if shoulder pain
- If not, just offer to take history

Quick Interpretation after History and PE

- ***Stiff & Strong*** = Frozen Shoulder or 1° Arthritis
- ***Stiff & Weak*** = RC Arthropathy (2° Arthritis)
- ***Weak only*** = RC Tear
- ***Impingement + only*** = RC Tendonitis/ Bursitis
- **Scarf's test + only** = ACJ Pathology
- ***Loose*** = Shoulder instability

****Pain messes up everything**

Ortho Made Simple - Elbow PE

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1. Inspection

- Expose Patient ***(Must offer)***
- Begin with patient's arms straight with palms facing you
- Look for cubitus varus/ valgus
- Bring hands up to sky - look for cubital tunnel release scars

2. Range of Motion

- Start with arms horizontal, parallel to the ground.
  - Flexion
  - Extension
- Tuck in elbows, Give 2 pens (or use thumbs)
  - Pronation
  - Supination
- ***If any AROM limited, check PROM***

3. Palpate

- Demonstrate isosceles triangle relationships of tip of olecranon, medial epicondyle (ME) and Lateral epicondyle (LE)
- Palpate medially
  - Medial Epicondyle pain for Golfer's Elbow
  - Ulnar nerve for subluxation (flex and extend elbow with finger over ME to feel for subluxation)
- Palpate laterally
  - Lateral Epicondyle pain for Tennis Elbow
  - Radial head - pronate/ supinate elbow to feel radial head rotating

4. Power

- 4 Muscle groups
  - Flexion (biceps, brachialis)
  - Extension (triceps)
  - Pronation (pronator teres, quadratus)
  - Supination (biceps, supinator)

5. Special Tests (Targeted)

****Most important to master***

- **Tennis Elbow tests**
  - Passive Wrist Flexion (Mill's)
  - Resisted Wrist Dorsiflexion (Cozen's)
  - Resisted Middle Finger Extension (Maudsley)
- **Golfer Elbow**
  - Passive Wrist extension
  - Resisted Wrist Flexion
- Distal biceps rupture - hook test
- Instability tests ***[Post Grad]***

6. Neurovascular

- Radial pulse
- Median nerve - OK sign
- Ulnar nerve - criss cross fingers
- Radial nerve - thumbs up

7. Function (if asked)

- Touch Hair
- Touch Mouth
- Touch back pocket

8. Complete/ Offer

- Just offer to take history

OMS - 3-Step Hand Screen + Function

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1. Screen - Static Inspection

- Palms Down
  - Wasting of 1st web spaces (Ulnar)/ Guttering (Ulnar)
  - Scars
  - Deformities - OA, RA
- Palm Up
  - Wasting - thenar (median), hypothenar (ulnar)
  - Scars
  - Attitude - Flexed (trigger, dupuytren's), Clawing (Ulnar), Wartenberg's (Ulnar)
  - Deformities - RA

Specific RA Song

"I see **multiple** deformities affecting **multiple** joints with **symmetrical** involvement. This is consistent with an **inflammatory** arthritis of which **RA is most common**. I will continue to screen for nerve involvement"

- Palms Down
  - Ulna caput deformity
  - Radial deviation at wrist
  - Ulnar deviation at MCPJ
  - Volar subluxations at MCPJ
  - Look at nails for pitting - "no pitting of nails to suggest psoriatic arthritis"
- Palms Up
  - Boutonniere, Swan neck deformities
  - Attitude - Flexed (trigger)
  - Scars - CTS release

2. Screen - Active Inspection

- Ask patient lift up her hand, open and close fingers, turn around and repeat, look for -
  - Triggering, contractures
  - Mannerfelt syndrome in RA (FPL rupture)
- Dorsiflex wrist, look for -
  - Drop fingers (especially in RA due to tendon ruptures), Dropped wrist
- Evaluate wrist ROM
  - Dorsiflexion
  - Palmar flexion
- Look at elbows
  - Scars - cubital tunnel (Ulnar)
  - Distal humerus scars (Radial)
  - Rheumatoid nodules
  - Gouty tophi

3. Screen - Nerve Screen

- Check motor
  - Median nerve - OK sign (Thumb abduction is also acceptable)
  - Ulnar - Criss-cross
  - Radial - Thumbs up
- Check sensation
  - Median nerve - Thumb tip
  - Ulnar nerve - Little finger tip
  - Radial nerve - First web space

Suggest Diagnosis + Pause

- "In my Screening, I have found signs suggestive of xxx as seen from yyy and zzz. I would like to confirm this by evaluating further"
- Pause for possible correction by examiner

7. Hand Functional Assessment

You need a key and a pen with you.

"I will now go on to assess the function of the hand". Just start doing and examiner may stop you halfway.

[Tool] Test (Grip being tested)

1. [Key] Pick up this key with 2 fingers (Dexterity grip)
2. [Key] Pick up with key with 3 fingers (Chuck grip)
3. [Key] Turn the key (Key pinch)
4. [Pen] Write with this pen (Pen grip)
5. [Forearm] Grab my forearm (Grasp)

Right after these 5 tests, ask the patient **"Can you tell me if there is anything that you wish to do but cannot do with your hands?"** - this is to demonstrate that you know function is not just defined by these grips but also his/ her ADLs.

Ortho Made Simple - Median Nerve PE

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1. Screen - Static Inspection

- Refer to OMS 3-step Hand Screen + Function

2. Screen - Active Inspection

- Refer to OMS 3-step Hand Screen + Function

3. Screen - Nerve Screen

- Refer to OMS 3-step Hand Screen + Function

Suggest Diagnosis + Pause

- "In my screening, I have found ***thenar wasting, loss of sensation of the thumb and weakness of thumb abduction.*** I will now go on to elicit for more signs of ***median nerve palsy*** and determine if this is ***high or low injury***"
- Pause for possible correction by examiner

4. Sensation

- 2 areas to test
  - Tip of thumb
  - Thenar eminence

Some of these are tested in screening. But just for clarity, I usually just repeat and say, "just to confirm, this area is numb?"

Quick Interpretation

- If both loss = high median nerve
- If only thumb loss = low median nerve; CTS

5. Power

- 5 muscles to test (Proximal to Distal)
  - FCR
  - Thumb abduction
  - Thumb opponens
  - FPL
  - FDP index finger

Quick Interpretation

- If all weak = High Median nerve
- Only Thumb Abduction and Opposition weak = Low Median Nerve; CTS

6. Special Tests

- Tinel's
- Durkan's
- Phalen's (Palmar flexion)
- Reverse Phalen (Dorsiflexion)

7. Hand Functional Assessment

- Refer to OMS 3-step Hand Screen + Function

8. Complete/ Offer

- Complete my examination by taking a history from this patient

Ortho Made Simple - Ulnar Nerve PE

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1. Screen - Static Inspection

- Refer to OMS 3-step Hand Screen + Function

2. Screen - Active Inspection

- Refer to OMS 3-step Hand Screen + Function

3. Screen - Nerve Screen

- Refer to OMS 3-step Hand Screen + Function

Suggest Diagnosis

- "In my screening, I have found ***hypothenar wasting, guttering of fingers, loss of sensation of the little finger and inability to adduct fingers.*** I will now go on to elicit for more signs of ***ulnar nerve palsy*** and determine if this is ***high or low injury***"
-
- Pause for possible correction by examiner

4. Sensation

- 2 areas to test
  - Tip of Little finger
  - Dorsal Aspect of 5th Metacarpal (DBUN)

Some of these are tested in screening. But just for clarity, I usually just repeat and say, "just to confirm, this area is numb?"

Quick Interpretation

- If both loss = High Ulnar nerve
- If only little finger loss = Low ulnar nerve

5. Power

- 5 muscles to test (Proximal to Distal)
  - FCU - main branch
  - Abductor digiti minimi
  - FDP little finger
  - First dorsal interosseous
  - Adductor pollicis - **Froment's Test**

Quick Interpretation

- All weak = high ulnar nerve
- Only Abductor digiti, Adductor Pollicis and 1DI is weak = low ulnar nerve

6. Special Tests

- Tinel's sign
- Subluxation of ulnar nerve at medial epicondyle

7. Hand Functional Assessment

- Refer to OMS 3-step Hand Screen + Function

8. Complete/ Offer

- Complete my examination by taking a history from this patient

Ortho Made Simple - Radial Nerve PE

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1. Screen - Static Inspection

- Refer to OMS 3-step Hand Screen + Function

2. Screen - Active Inspection

- Refer to OMS 3-step Hand Screen + Function

3. Screen - Nerve Screen

- Refer to OMS 3-step Hand Screen + Function

Suggest Diagnosis + Pause

- "In my screening, I have found ***wrist drop, loss of sensation over first web space and inability to extend thumb.*** I will now go on to elicit for more signs of ***radial nerve palsy*** and ***determine the level of injury***."
- Pause for possible correction by examiner

4. Sensation

- 1 areas to test
  - SRN at first webspace

Some of these are tested in screening. But just for clarity, I usually just repeat and say, "just to confirm, this area is numb?"

Quick Interpretation

- If intact = PIN Palsy
- If loss = Radial nerve proper palsy or SRN palsy (if no weakness)

5. Power

- 5 muscles to test (Distal to Proximal)
  - EPL Retropulsion
  - EDC
  - ECRL
  - BR
  - Triceps

Quick Interpretation

- If all weak = Crutch palsy (compression at axilla)
- All weak except triceps = Radial groove or Saturday Night Palsy
- Only EPL, EDC, ECRL weak = PIN Palsy
- None weak, only sensory loss = SRN Palsy (Wartenberg's syndrome)

6. Special Tests

- Tinel's sign along the course of the radial nerve (especially along posterior humerus scar if any)

7. Hand Functional Assessment

- Refer to OMS 3-step Hand Screen + Function

8. Complete/ Offer

- Complete my examination by taking a history from this patient

Ortho Made Simple - Hip PE

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1. Inspection

- Expose to underwear (must offer)
- On Standing
  - Walk around patient
  - Look for scars, erythema, pelvic obliquity, obvious LLD
- On Walking (Gait)
  - Comment on presence/ use of walking aid
  - Type of gait - antalgic, Trendelenburg, stiff hip, short leg gait, foot drop

Interpretation:
ALLD = 0, TLLD = 0 ⟶ No LLD
ALLD = 0, TLLD = x ⟶ Complete compensation
ALLD = x, TLLD = x ⟶ No Compensation
ALLD < TLLD ⟶ Incomplete compensation
ALLD > TLLD ⟶ Shortening + Ipsilateral Adduction contracture

2. Special Tests I

- Standing - **Trendelenburg Test (*Know causes)**
  - Demonstrate and explain to patient before execution (to flex the knee backwards)
  - Squat in front of patient, hold ASIS and iliac crest with both thumbs, ask patient to hold your forearms
  - Benefit: 3 point assessment: visual, pressure tactile on forearm and tactile on thumb
  - ***Interpretation:*** Hip will droop on contralateral side
- Lie Patient down - **Limb Length Measurement Sequence**
  - *"While patient is in his natural lying state, I will check for Apparent Limb length Discrepancy (ALLD) first"*
  - Check **ALLD** from Xiphisternum to tip of medial malleolus (MM)
  - Regardless of ALLD, square the pelvis and place contralateral limb in same position. *"I will now check for True LLD (TLLD)"*
  - Check **TLLD** from ASIS to MM
    - If No TLLD ⟶ End. Proceed to ROM
    - If TLLD Present ⟶ Proceed to evaluate site of shortening

2. Special Tests I (Cont'd)

- **Site of Shortening Evaluation**
  - Start with **Galeazzi** - be intentional in aligning heels, look at the side.
    - If tibia shortening ⟶ End. Proceed to ROM
    - If femur shortening ⟶ Proceed with Bryant's Triangle to evaluate if shortening is proximal or distal to Trochanters
  - **Bryant's triangle** - Thumb at ASIS, Index Finger drop perpendicular from ASIS, Middle Finger at GT. Compare distance between Index and Middle fingers.
    - If no difference ⟶ Shortening is distal to GT e.g. shaft
    - If shorter ⟶ Shortening is proximal to GT e.g. neck

3. Palpation

- Feel along 3 areas
  - Anterior groin
  - Anterior Superior Iliac Spine
  - Greater Trochanter

4. Range of Motion

- **Passively** extend knee to full - comment *"No Fixed Flexion Deformity in knee"*
  - If Knee FFD present, hang leg off the bed for Thomas Test
- Do **Thomas test** to evaluate FFD at hip
  - Hand under lumbar spine
  - Flex **both hips** till lordosis obliterated
  - Ask patient to assist in **holding the knee of the normal side** (can ask examiner to assist if patient is frail) ⟶ This fixes the pelvis
  - Extend leg that you are checking
  - With lordosis still obliterated (i.e. Pelvis is still fixed), if thigh of affected leg is elevated off the couch (not full extension) = FFD present
- Check Flexion - flex hip while holding *ipsilateral* ASIS
- Check Abduction and Adduction while holding *contralateral* ASIS
- Check Internal and External Rotation

Examine only affected side unless asked to compare

5. Power

- NIL

5. Special Tests II

- Hip impingement tests
  - FABER (Groin pain) - Flex, Abduction, ER
  - FADIR (Groin pain) - Flex, Adduction, IR

6. Neurovascular

- DP and PT pulses
- Dorsiflex foot against resistance to evaluate for foot drop

8. Complete/ Offer

- Lumbar Spine Examination

Ortho Made Simple - Knee PE

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1. Inspection

- Expose, on **Standing -** Walk around the patient
  - **Front** - Varus/ Valgus/ Scars, Patella squint
  - **Side** - Flexion deformities
  - **Back** - Popliteal swelling
- On **Walking** (Gait)
  - Comment on presence/ use of walking aid
  - Type of gait e.g., varus thrust, antalgic

2. Special Tests I

- On **Sitting** at edge of bed ***[Do only in young patient suspecting patella instability]***
  - J-sign (individually)
  - Feel for Crepitus when returning to flexion
- On lying **Supine**
  - Temp/ Warmth [Compare to other leg]
  - Knee Effusion Tests in sequence
    - Fluid bulge test ***[If -ve, comment "will not proceed with Cross fluctuance and Patella tap]***
    - Cross fluctuance
    - Patellar tap
  - Patella OA tests - Medial and lateral facet tenderness, Crepitus if not done, ***Patella grind and Clark's Test [offer as painful]***
  - Apprehension test ***[In young patients suspecting patella instability]***

3. Range of Motion

- Ask patient to do a **Active** Straight Leg Raise - look at side for flexion deformity
  - If not full extension, extend **Passively** for patient
    - If still cannot extend fully = ***"Fixed Flexion Deformity"*** (FFD)
    - If can extend fully passively = ***"extension lag"***
- With knee extended, flex knee to check Flexion
- At the end of flexing knee, do a **Hip screen** by internally and externally rotate the hip and ask for pain. ***"Hip is non tender on screening"***

4. Palpation

- Put knee back to 90 deg on couch and place other knee in same position
  - Be deliberate in aligning heels
- Look from side while holding on to the foot in position - comment on posterior sag
- Sit on both feet
- Palpate knee systematically with **one** finger
  - Tibial Tuberosity → Patellar tendon → Patella → Superior Pole → Medial and Lateral joint Line → Gerdy's Tubercle → Fibula Head

5. Power

- NIL

6. Special Tests II

- **Knees still bent while you are sitting on the feet**
  - Medial tibial step off (loss = PCL tear)
  - Posterior Drawer Test (Do first to prevent false positive anterior drawer test)
  - Anterior Drawer Test
- **Leg in Extension**
  - Lachman at 30 deg
  - MCL at 0 and 30 degrees
  - LCL at 0 and 30 deg
- If ACL/ PCL tests positive ***(Postgrad)***
  - Recurvatum Test
  - Turn Prone for Dial Test

7. Neurovascular

- DP and PT pulses
- Ask patient to dorsiflex foot against you, comment ***"no foot drop"***

8. Complete/ Offer

- Hip examination

Ortho Made Simple - Foot and Ankle PE

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1. Inspection I - Standing

On Standing - need to describe a few sentences while walking around patient (front, side, back)

- **System** - Forefoot, Midfoot, *Hindfoot*
- **ALL** - ulcers, callus, erythema, scars
- **Pes Planus** - too many toes sign, loss of medial arch, *hindfoot valgus*
- **Hallux Valgus** - Big toe Lateral deviation, media deviation of MT, Varus deformity of 1 st MT, Pronation of hallux, Overriding 2nd toe, Hammer toes + Pes Planus findings
- **Pes Cavus** - claw toes, *peek-a-boo heel*, Wasting of entire unilateral limb (Polio), high arch, *hindfoot varus*
- **Hallux Rigidus** - Dorsal bunion
- **Charcot** - deformity e.g. rocker bottom

2. Inspection II - Gait

Comment on use of walking aid/ special boot or shoes, type of gait (observe for and comment if negative)

- **ALL** - comment on use of walking aid, special shoes, stable?, antalgic?
- **Pes Planus** - flat ground contact with loss of propulsion
- **Hallux Valgus** - look for gait a/w pes planus
- **Pes Cavus** - look for high steppage gait due to foot drop (polio), hands on thigh gait (polio), broad based (CMT)
- **Hallux rigidus** - walking on lateral border of foot, loss of big toe push off
- **Charcot** - broad based (Tabes)

3. Special Tests I - Standing

After patient walks back and still standing

- **Pes Planus** (Test in Sequence)
  - Double Tiptoe (Flexible vs Rigid)
  - Jack's test (Flexible vs Rigid)
  - Single Tiptoe Test (Strength of PT)
- **Hallux Valgus** - Do tests for Pes Planus (likely present)
- **Pes Cavus**
  - Look at back for Spinal Dysraphism
  - Coleman Block Test (Flexible vs Rigid)
- **Hallux Rigidus** - Tests for Pes Planus (if present)
- **Charcot** - Romberg test for tabes dorsalis

4. Inspection III - Sit + Shoes

- Sit the Patient down, you assume a squatting position
- While patient is sitting down, this it the cue to **pick up shoes** and comment on them
  - Comment on sole wear
  - Comment on presence of insoles
  - Charcot - comment on the boot (CROW)
- Lift up patient's foot, and look at the **bottom of the foot**
  - Look for callus (transfer metatarsalgia callus), ulcers, scars, open and look at web spaces

4. Palpation and Selective ROM

Palpate areas that you think are involved and painful.

- **Pes Planus** - P. medial arch for tenderness
- **Hallux Valgus** - Palpate (P.) bunion, correctability, MTPJ ROM
- **Pes Cavus** - P. medial arch for tenderness
- **Hallux Rigidus** - P. IPJ for tenderness, MTPJ ROM, IPJ ROM
- **Charcot** - P. deformities for tenderness
- **Ankle instability** (if so far nothing at all)
  - P. for Ottawa Ankle rules
  - P. ATFL/ CFL

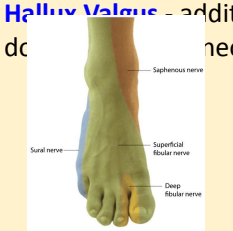
- **4 other ROM to check (if asked only)**
  - Tibiotalar Joint - F/E
  - Subtalar - I/E
  - Chopart joint - P/S
  - Midfoot/ lisfranc joint - Abd, Add, PF, DF

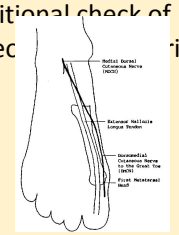
6. Special Tests II + Selective Power

- **ALL** - Silfverskiold Test
- **Pes Planus**
  - Check PTT in PF & Inv. (weak/pain)
- **Hallux Valgus**
  - Grind Test (painful)
  - Do Pes Planus tests if present
- **Pes Cavus**
  - Check ATT in DF & Inv. (weak/pain)
  - Check PB in DF & Ev. (weak/pain)
- **Hallux Rigidus**
  - Grind test (painful)
- **Charcot**
  - Monofilament Test
- **Ankle Instability**
  - Anterior Drawer test
  - Talar Tilt
  - Check PL in PF & Ev. (Weak/ pain/ sublux)

7. Neurovascular

- DP and PT pulses
- **General nerves** - check and comment quickly
  - Deep Peroneal - first web space
  - Superficial Peroneal - dorsum
  - Sural - lateral foot border
  - Saphenous - Medial malleolus
- **Hallux Valgus** - additional check of do nec ribution





- **Pes Cavus** - Peripheral numbness (CMT)
- **Charcot** - already done monofilament test, if not check for peripheral neuropathy.

8. Complete/ Offer

If blankout, just mention take history to assess function

- **Pes Planus** - history for function, beighton score
- **Hallux Valgus** - history for function
- **Pes Cavus** - Look at hands (for dorsal guttering in CMT), Look at hands for opponens wasting (polio)
- **Hallux Rigidus** - history to rule out gout
- **Charcot** - full neurological exam, history for DM control and other complications

Ortho Made Simple - Cervical Spine PE

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1. Inspection

- Expose Patient (offer)
- On Standing, Walk around patient
  - Front - scars
  - Side - Kyphosis, lordosis
  - Back - scars
- Generally, look for scars, erythema, sinuses, deformities and features of **Ankylosing Spondylitis!**
- On Walking (Gait)
  - Comment on walking aids
  - Broad based/ Unsteady

2. Special Tests I

- **Romberg** Test
  - Feet together
  - Close eyes
  - Be prepared to catch patient if he becomes very unsteady
- **Tandem** Gait - be prepared to catch patient if he becomes very unsteady

3. Range of Motion

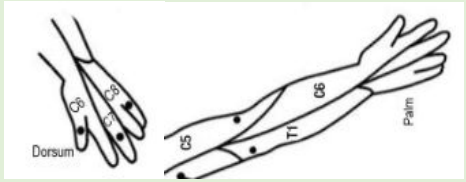
- Either sit or keep standing
- Check 3 movements
  - Flexion/ Extension - "chin to chest"
  - Side bending - "ears to shoulder"
  - Side Rotation

4. Palpation

- Palpate for central tenderness and paraspinal tenderness

5. Power, Sensation, Reflexes

- Use ASIA Score:
- **Power**
  - C5 - elbow flexion
  - C6 - wrist extension
  - C7 - elbow extension
  - C8 - finger flexion
  - T1 - finger abduction
- **Sensation** (follow the dots)



- **Reflexes**
  - Biceps
  - Triceps
  - Inverted Supinator

6. Special Tests II

- **Hoffmann's**
  - Flick middle finger
  - Watch for flexion of the thumb and index fingers
- **Grip Release Test**
  - Check your watch for 10 seconds and count
  - > 20 = normal
- **Finger Escape**
  - Ask patient to hold both hands out with fingers extended and adducted, maintain for 30s
  - Positive = Little finger spontaneously abducts due to weakness of intrinsic muscle

7. Neurovascular

- Radial pulse

8. Complete/ Offer

- Offer lumbar spine exam to look for "tandem stenosis"
- Offer to test function - button clothes, writing
- Offer Spurling's and Lhermitte's, knowing they cause pain
  - **Spurling** = A test for **radiculopathy.** *Axial compression, neck extension with rotation and lateral flexion* ***to the side of the symptoms***
  - **Lhermitte's** = A test for **myelopathy.** *Ask patient to flex the neck maximally. A positive test shows an electrical "type" sensation down the spine, possibly extending into the extremities near the end range of flexion.*
- Offer to do Digital Rectal Exam (DRE)

Ortho Made Simple - Lumbar Spine PE

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1. Inspection

- Expose Patient (offer)
- On Standing, Walk around patient
  - Front - Scars
  - Side - Kyphosis, lordosis
  - Back - Scars
- Generally, look for scars, erythema, sinuses, deformities
- On Walking (Gait)
  - Comment on walking aids
  - Broad based/ Unsteady

2. Special Tests I

NIL

3. Range of Motion

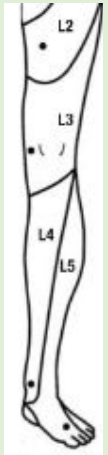
- While standing, Check 3 movements
  - Flexion and Extension
  - Side bending (touch knee at side)
  - Stabilize pelvis and ask patient rotate
- If limited in flexion, do **Schober's Test**
  - Feel for PSIS, visualize horizontal line, measure 10cm above
  - Hold the measuring tape *proximally*, ask patient to flex
  - Locate the same horizontal line at level of the PSIS
  - If < 5cm increase, Schober is +ve

4. Palpation

- "Let me know if there is any pain"
- Palpate for central tenderness/ paraspinal tenderness

5. Power, Sensation, Reflexes

- Use ASIA Score, compare both sides
- **Power**
  - L2 - Hip flexion
  - L3 - Knee extension
  - L4 - Ankle dorsiflexion
  - L5 - Big toe dorsiflexion
  - S1 - Ankle plantarflexion
- **Sensation** (follow the dots)



- **Reflexes**
  - Knee
  - Achilles tendon
  - Babinski

6. Special Tests II

- **Lesague's Test** aka **Straight Leg Raise (SLR) test** (Do for both legs)
  - If Lesague's Positive →
    - Elicit the **Bragard's sign** *(Lower leg just below the pain threshold and the foot dorsiflexed)* and do
    - And **Bowstring test** *(At the point of positive SLR, slightly flex the patient's knee and apply pressure on the popliteal fossa)*
  - If Lesague's Negative → Move on
- Sacroiliac Joints - do for both sides
  - **FABER** test looking for pain in the buttock

7. Neurovascular

- DP, PT pulses in the lower limbs (Acceptable to just feel for DP bilaterally)

8. Complete/ Offer

- Offer cervical spine exam to look for "tandem stenosis"
- Offer to do Digital Rectal Exam (DRE)

Other Courses Available

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MS PHYSICAL EXAM REVIEW COURSE

Physical examination 8-step **framework** with **explanations** and **run-through** videos for each major musculoskeletal region, complemented by **textbook readings**, **quizzes**, and **Q&A**

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70-minute lecture video covering **X-rays** of all major musculoskeletal regions, explaining important **special views**, **lines**, and **anatomical structures**. Supplementary **quizzes** and **flashcards** for reinforcement