

Musculoskeletal Radiograph Interpretation – Generic Approach

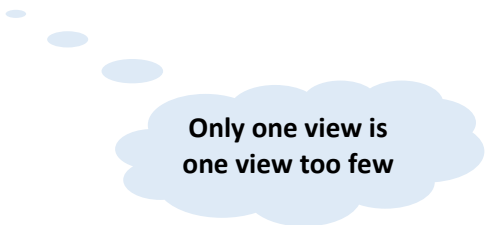
The generic approach to interpreting musculoskeletal radiographs is outlined here. This is sufficient for most single bone radiographs. However, radiographs of many joints/areas require a specific approach to interpretation or have specific signs which need to be looked for within the *ABCS approach* – see [here](#).

Demographics

- Patient: name, DOB, hospital number, age, sex
- Previous films
- Other orientations (need AP and another view – usually lateral)

Radiograph detail

- Date
- Type (AP, lateral, other view)
- Area of body (including left/right)
- Adequacy
 - Area: ideally need joint above and below
 - Rotation
 - Penetration (exposure)



Only one view is
one view too few

Interpretation (**ABCS**)

Briefly mention obvious abnormalities first

Alignment

- Joints and bones – *look for dislocation or subluxation*

Bones

- Cortex – trace around looking for fractures → **SEE NOTES BELOW FOR HOW TO DESCRIBE FRACTURES**
- Bone fragments
- Texture of bone between cortex

Cartilage

- Joint spaces
- Disruption of joint contours
- Signs of OA/RA/psoriatic/gout/pseudogout (below)

Soft tissues

- Disruption
- Swelling
- Foreign bodies or calcification

To complete

- “To complete my analysis, I would examine other films and determine the clinical history”
- Summarise

Fracture Description

System for describing a fracture (SOD)

- **Site**
 - Bone
 - Intra/extra-articular
 - Position (proximal/middle/distal third)
- **Obliquity**
 - Completeness (complete, incomplete)
 - Direction (transverse, oblique, spiral)
 - Skin penetration (open, closed)
 - Condition of bone (comminuted, segmental, multiple, impacted)
- **Displacement**
 - Translation (% of bone diameter) – *ant/pos or med/lat*
 - Angulation (°) – *ant/pos or med/lat*
 - Rotation (°)
 - Length distraction/shortening

e.g. "There is an extra-articular fracture of the distal third of the right tibia. It is a complete transverse fracture. The fracture is closed. It is likely to be a stable fracture. It is non-displaced."

Glossary

Completeness

- Complete (bone breaks along the whole of its width)
- Incomplete (bone cracks but ends do not separate)

Direction

- Transverse (straight break at a right-angle to the long axis of the bone due to trauma)
- Spiral (corkscrew type fracture due to rotation injury)
- Oblique (straight break through a bone but at an angle i.e. not transverse; very rare)

Surrounding structural damage

- Simple (isolated bone damage i.e. no significant soft tissue damage)
- Complex (significant soft tissue damage)
- Closed (skin is intact)
- Open / compound (broken bone protrudes through the skin)

Condition of bone

- Stable (likely to stay in a sound position during healing)
- Unstable (likely to change orientation)
- Comminuted (more than two detached bone fragments)
- Segmental (multiple complete fractures to bone creating detached bone fragment)
- Multiple (several fracture lines)
- Impacted (ends of the break are compressed together)
- Hairline/fissure (crack through the outer layer of the bone)
- Greenstick (incomplete fracture of one side of the bone resulting in bending of the bone, usually in children)

Common Joint Pathology

- Osteoarthritis
 - Loss of joint space
 - Osteophytes
 - Subchondral cysts
 - Subchondral sclerosis
- Rheumatoid arthritis
 - Loss of joint space
 - Peri-articular osteopenia
 - Juxta-articular (marginal) erosions - CLASSIC
 - Soft tissue swelling
- Psoriatic arthritis
 - Central erosions (→ pencil in cup appearance)
- Gout
 - Punched out lesions in bone (peri-articular tophi)
- Pseudogout
 - Chondrocalcinosis

