

DON'T FORGET THE PLAIN FILMS!

At ARG we strive to produce plain films of the highest quality. Our branches at 101, Northern Clinic, Parnell and Merton Rd rely on our relationships with Orthopaedic and Sports Medicine Specialists to fine tune our plain film imaging and our Accident and Medical branches add to our expertise by generating large volumes of trauma radiographs. We disseminate any refinements to our techniques throughout the practice via regular medical education sessions and key resource people who make themselves available for any queries.

We always like our referrers to **clearly communicate the clinical question**. In most situations we do not need clinicians to list specific views. When there is a difficult clinical issue the radiographer can liaise with the radiologist to tailor the examination appropriately.

For musculoskeletal (MSK) symptoms plain films should almost always be the first investigation. They are the key to identifying fractures, dislocations, arthritis, tumour and the complications of joint arthroplasty. They compliment ultrasound and magnetic resonance imaging (MRI) for soft tissue injuries and tendinopathy. There are very few situations where we regret obtaining plain films, however, we have had many instances where omitting the plain films has had dire consequences.

SHOULDER VIEWS

AP joint space – profiles the glenoid and is AP to the humeral head. It shows us the articular cortex, anatomical neck, greater tuberosity and cartilage space. (Fig 1. Greater tuberosity fracture)

Axillary – preferred view to assess glenohumeral alignment particularly in suspected dislocation. This view can be challenging to obtain due to pain in the acute setting.

Outlet – assesses the acromion and subacromial space particularly to identify an acromial spur or os acromiale in impingement.

Acromioclavicular joint - can only be visualised on a dedicated AP view.



Fig 1. AP joint space view shows minimally displaced greater tuberosity fracture.



Fig 2. PA 90 view shows Keinbock's disease with sclerotic fragmented lunate and negative ulnar variance.

WRIST VIEWS

PA 90 degrees - gives an overview of bone anatomy, cartilage space and establishes ulnar variance in the context of ulnocarpal impaction syndrome and Keinbock's syndrome. (Fig 2. Keinbock's disease)

Lateral - assesses carpal alignment in trauma and instability.

Oblique - profiles the scaphotrapezium and thumb carpometacarpal joints in radial sided wrist pain.

Ulnar deviation - elongates the scaphoid and is helpful if a fracture is being queried.

HIP VIEWS

AP pelvis – usually includes the whole pelvis for assessment of the hip and sacroiliac joints and the femoral head, neck and trochanteric region in osteoarthritis and trauma. For hip joint replacement the AP film is centred lower to include the whole of the femoral component.

Lateral - several types of lateral view are in use. The most common is the **rolled lateral** which projects the anterior cortex of the femoral head and neck superiorly and the lesser trochanter and posterior cortex inferiorly. This is the easiest view for the technician and patient.

Cross table horizontal lateral - is typically requested by the specialist to assess fracture alignment and femoral head-neck offset in suspected femoroacetabular impingement (FAI).

Dunn View - is an alternative view for assessing the head-neck offset (Fig 3. Loss of head-neck offset suggesting FAI)



Fig 3a.

Dunn views left hip. Fig 3a shows normal anterior femoral head-neck offset.



Fig 3b.

Fig 3b shows loss of anterior femoral head-neck offset with mild sclerosis and small cysts in anterior femoral neck in FAI (arrow)



Fig 4. AP Weight-bearing view shows a displaced Second fracture at lateral cortex of tibia epiphysis in anterior cruciate ligament injury (arrow)

KNEE VIEWS

AP weightbearing - for bone anatomy, cartilage space and chondrocalcinosis. (Fig 4. Second fracture - lateral tibial capsular avulsion indicating an anterior cruciate ligament tear)

Flexed PA weightbearing - is an additional view occasionally requested by specialists. This profiles the posterior weight-bearing articular cartilage on the femoral condyles which can be the earliest site of cartilage thinning.

Lateral - can be obtained supine or standing. In acute trauma a horizontal-ray lateral in the supine position identifies a fat-fluid level which confirms an intra-articular fracture that may be otherwise occult.

Patellar skyline - is the only view which can evaluate patellofemoral alignment and cartilage space.

RECOMMENDATIONS

- Plain films should still be the initial investigation for MSK symptoms around joints and should be considered with every MSK ultrasound.
- The referrers role is to clearly articulate the clinical question. It is not necessary to know the specific plain film projections.
- If the plain films do not show a fracture and there is a high index of suspicion and clinical urgency, MRI is the investigation of choice. In less urgent situations follow-up films in 2 weeks are recommended in adults and 10 days in young children.
- If the plain films show an intra-articular fracture CT is the investigation of choice to assess any displacement of the articular cortex. As a general rule, the joint tolerates very little displacement of the articular cortex and cartilage resulting in a low threshold for internal fixation to achieve anatomical position.
- If fracture union is an issue CT is more sensitive than plain films.

DR NEAL STEWART

CHANGING OF THE GUARD

Dr Paul White has recently stood down from the role of Managing Partner of Auckland Radiology Group. He had been in that position for 28 years, taking the practice from a partnership of three radiologists to the large Auckland wide practice it is now. During that time Paul has been involved with the introduction of many of the innovations that have led to radiology in Auckland being where it is today, including the installation of the first MRI scanner in a public hospital in the country. In addition to his management role at ARG Paul has continued to practice as a general and paediatric radiologist, and was recently made an honorary consultant at Starship Hospital, after many years of service in paediatric radiology. Dr White remains a partner in ARG and continues as a practicing radiologist.

Dr Stephen Wood has now taken over as the Managing Partner of ARG. He is committed to keeping the practice at the forefront of radiology in Auckland and is looking forward to the challenges sure to come with his new role. In addition to ARG, Steve also works as a consultant at Auckland City Hospital (Body Imaging) and at Breastscreen Counties-Manukau.