Introduction

The wrist is perhaps the most complicated joint in the body and the most important joint for today's human being in this computer and internet age. Evolutionary in concept where so many bones are constrained to work together, it is not surprising that where there is strain there is conflict. Pain is often the presenting symptom. It is not surprising, then, that the painful wrist presents the physician with a diagnostic challenge. The differential diagnosis is extensive and a definite diagnosis is only achieved in about 70% of cases[1].

Injuries to the wrist account for 14% of all attendances at the accident and emergency department[2]. The time from injury to diagnosis and treatment is a relevant prognostic factor. Patients may present with acute (<1 week), subacute (<1–6 weeks) or chronic (>6 weeks) wrist pain or instability[3].

Ultrasound examination of the wrist is a quick and accessible method of excluding soft tissue abnormalities, particularly tendon damage [14,16]. Ultrasound is also valuable for identifying ganglia and synovial cysts, which may cause persistent wrist pain. Some physicians would advocate the use of ultrasound scanning as an extension of the physical examination. However, ultrasound findings and the quality of their interpretation is operator-dependent. Furthermore, given the complexity of the wrist joint, ultrasound findings may be limited. Because of this, it is recommend that bone scanning be used first and that, where necessary, ultrasound examination is performed and interpreted by a radiologist experienced in wrist imaging[15].

Computed tomography (CT) is an excellent tool for assessment of osseous based abnormalities. Multiplanar and three-dimensional reconstructions provide exquisite anatomical detail. Musculoskeletal imaging has significantly improved with multislice CT–which allows extended anatomical coverage with thin slices. It also facilitates scanning of obese patients as well as patients with metal hardware. A volumetric image set with isotropic properties can be obtained in a single acquisition with a 0.5mm slice width[4].

CT is the method of choice for showing bone abnormalities such as bone destruction. In the assessment of trauma, the role of CT is to allow accurate definition of the extent of fractures and to depict intra-articular fragments that are not visualized at conventional radiography[8].

CT used with or without a contrast medium is particularly helpful in identifying joint irregularities and soft tissue injuries[10]. Fractures that are difficult to detect, such as those of the hook of hamate and subluxation of the distal radioulnar joint, may be evaluated by CT imaging[11].

Magnetic resonance imaging (MRI) has, at the moment, several characteristics of the ideal imaging technique for the evaluation of most regional musculoskeletal disorders. The magnets are now stronger, and scanners have become more sensitive and better able to detect even minimal anatomical and functional changes. High sensitivity in detecting numerous radiographically occult abnormalities, lack of ionizing radiation, anatomical detail, and functional information are only some aspects of the remarkable strength of MRI. It can give us detailed information concerning the source of pain and the nature and severity of

the tissue abnormalities. Because the clinical diagnosis of regional musculoskeletal pain may be equivocal, MRI has proved to be the modality of choice, following plain radiography, for imaging a number of disease processes such as osteonecrosis, many musculoskeletal tumours, marrow replacement processes, osteomyelitis, and bone trauma. MRI can detect bone erosions and active synovitis long before the changes are visible on conventional radiographs.31 Thus, it can be of great value for differentiating cases of early rheumatoid arthritis from those of other diseases with joint manifestations[5, 6].

The accuracy of MRI is dependent on technical factors, such as magnet field strength, surface coils, and sequence selection[9].

Timing of examination is another relevant aspect for a precise diagnosis because MRI findings are dependent on the stage of the disease[12].

MRI is valuable in the assessment of the painful wrist. It helps to depict soft tissue injuries, such as those of muscle, ligament and cartilage, as well as bone lesions. Avascular necrosis of the lunate (Kienböck's disease) is accurately evaluated on MR images, as are injuries of the scapholunate ligament[11, 12]. Assessment of the growth plate in adolescent patients may reveal physeal cartilage extension into the metaphysis, representing a healing sign in chronically stressed wrists, as is the case in young athletes. However, several studies cast doubt over the accuracy of MRI in identifying triangular fibrocartilage complex tears[13].