CASE STUDY

CHALLENGING CLINICAL CONSIDERATIONS

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radiology SA

KNEE IMAGING

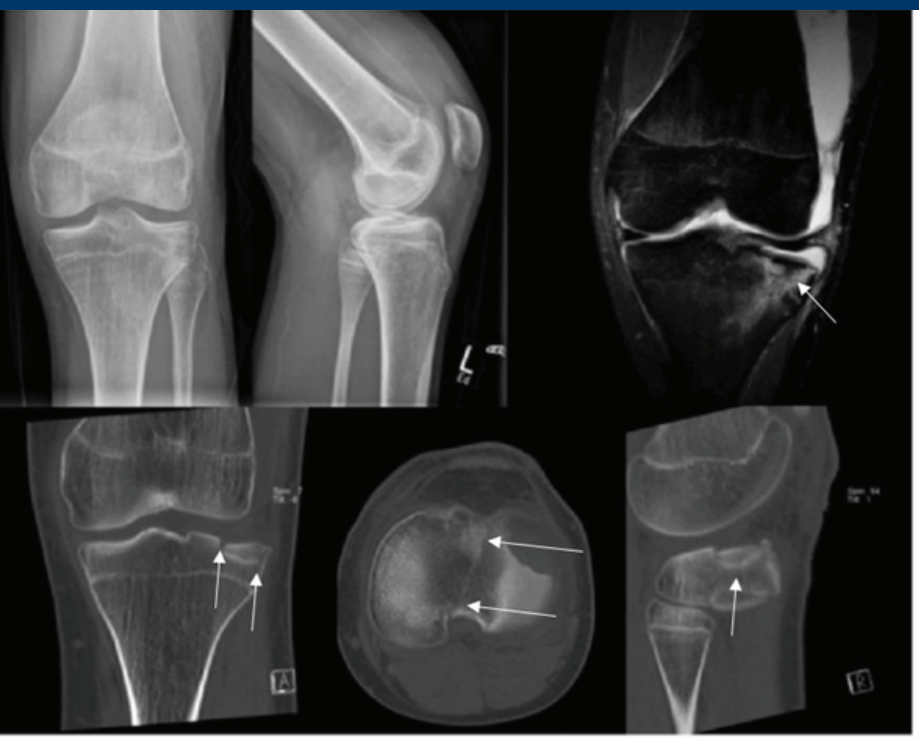

Figure 1: 16 yo male with knee pain after sports injury. Top left: frontal and lateral knee X-rays exhibiting a knee joint effusion and proximal fibula cortical irregularity. Bottom row from left to right: Coronal, axial and sagittal knee CT in bone windows depicting the depressed lateral tibial plateau (LTP) acute fracture extending through tibial spine. Top Right: fluid sensitive coronal sequence MRI knee demonstrating the marrow oedema and chondral fracture associated with the depressed LTP fragment and consequent articular surface irregularity which was subsequently surgically corrected to mitigate risk of acceleration osteoarthritis.

Radiology in Australia is constantly evolving to keep up with patient expectations, technology and Medicare indications. Our aim is to stay up to date, and provide the most effective and efficient imaging solution to help manage patients in our local community.

In this article we consider the utility of MRI knee versus X-ray and CT for the workup of knee injuries, particularly in those aged between 16 - 49 years.

MRI knee is a safe examination, free of ionising radiation and provides exquisite imaging detail for the assessment of cartilage, bone bruising and fractures, menisci, synovium, collateral and cruciate ligaments and tendon pathology. The standard MRI knee protocol can be acquired in 7-12 minutes making it a brief examination.

Figures 1-3 illustrate multimodality comparison examples where MRI has provided a superior demonstration of the extent of knee injury in a definitive fashion, effectively obviating the need for any further imaging and allowing the treating specialist(s) to make definitive management decisions for these patients.

In addition, knee MRI allows for the sensitive detection of incidental osseous lesions and marrow infiltration which may contribute to symptoms or may represent incidental sinister findings that require further investigation as seen in Figure 4.

Referring for a MR knee is exactly the same as referring for a CT scan, although to access the medicare rebate, the clinical indication should specify:

(a) inability to extend the knee suggesting the possibility of acute meniscal tear; or
(b) clinical findings suggesting acute anterior cruciate ligament tear

We are able to bulk bill rebatable scans for health care card holders. RSA provide Medicare rebatable MRI scans at our clinics conveniently located at Parkside, Dulwich, Calvary, Central Districts Hospital, and Memorial Hospital.

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CASE STUDY

CHALLENGING CLINICAL CONSIDERATIONS *continued...*

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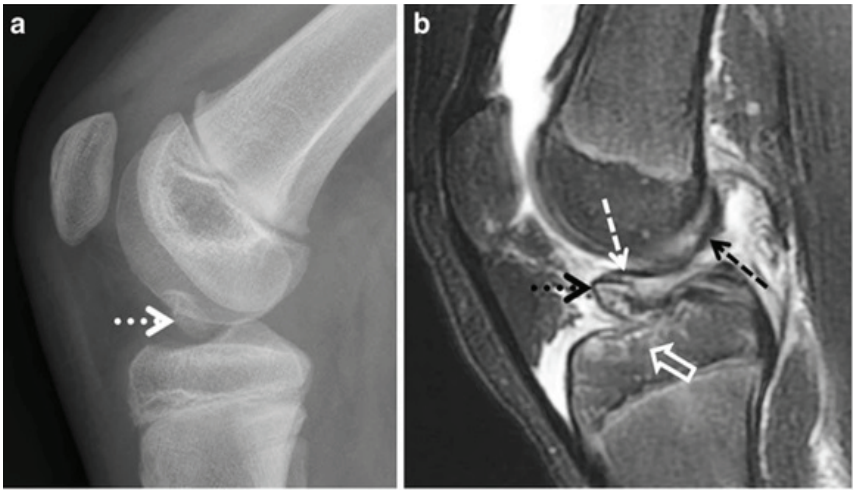

Figure 2: Paediatric knee traumatic sports injury. Left image is a lateral knee x-ray depicting a fracture fragment projected over anterior aspect of intercondylar fossa. Right image is a matching sagittal fluid sensitive MRI sequence of the same knee demonstrating a displaced avulsion fracture of the ACL tibial footprint and exuberant surrounding marrow and soft tissue oedema with effusion.

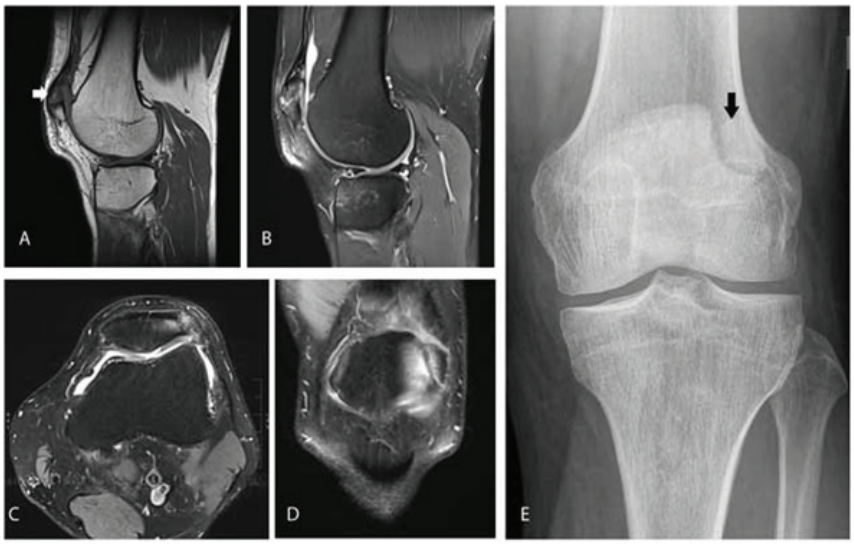

Figure 3: Symptomatic bipartite patella in a patient with anterior knee pain. Although bipartite patella can be an anatomical variant, it can also be a source of pain similar to a pseudarthrosis. Sagittal T1-WI (A) shows a separate bone fragment at the superolateral aspect of the patella (arrow). Sagittal (B), axial (C) and coronal (D) FS T2-WI reveal bone marrow oedema within the accessory fragment and the adjacent supero-lateral aspect of the patella. Plain radiography (E) confirms a sclerotic delineated accessory fragment at the superolateral aspect of the patella however the oedema indicative of active inflammation is radiographically occult.

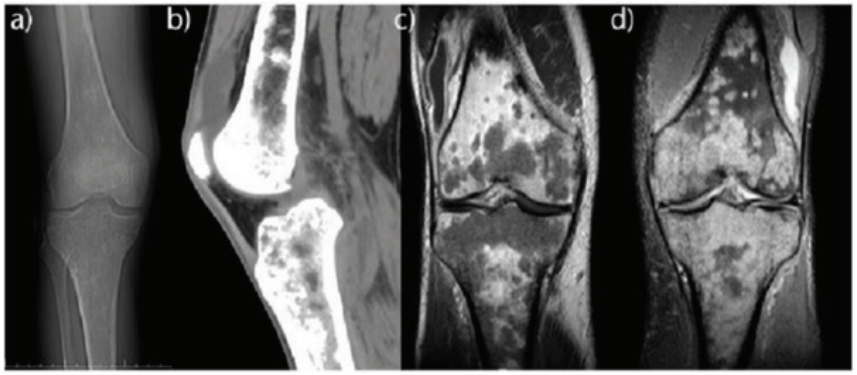

Figure 4: a) frontal knee X-ray shows heterogeneous marrow density in the distal femur and proximal tibia. b) CT sagittal reformat exhibits the sclerotic bone infiltration. c) T1 weighted coronal MRI knee post contrast highlights the extent of abnormal marrow signal. d) T2 fat saturated coronal MRI knee also demonstrates the magnitude of bone infiltration in a patient with Erdheim Chester disease (non-Langerhans cell, non familial, multisystem histiocytosis).

References:
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