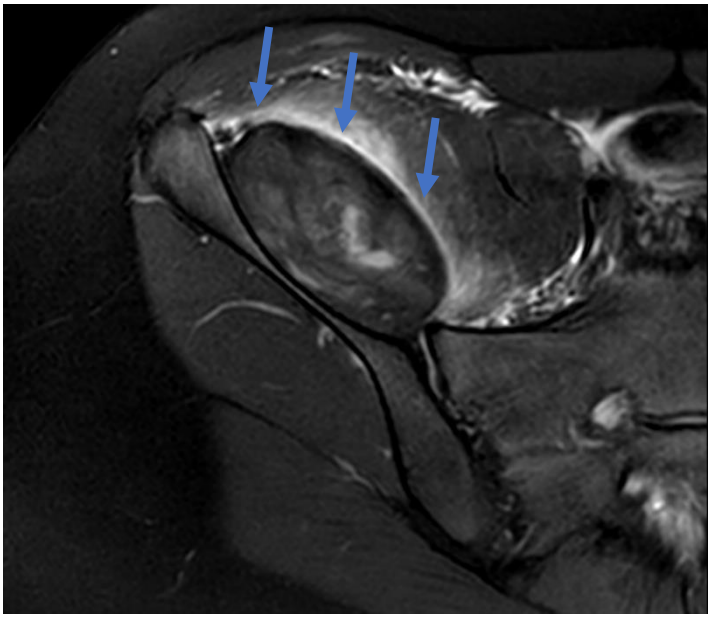
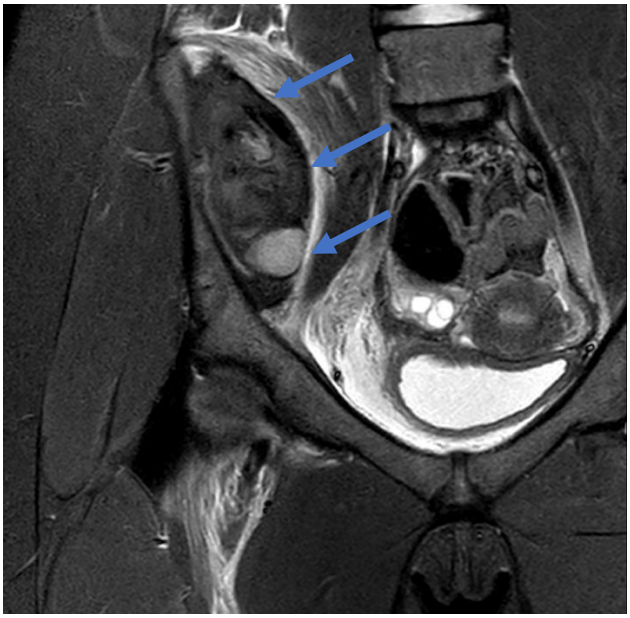
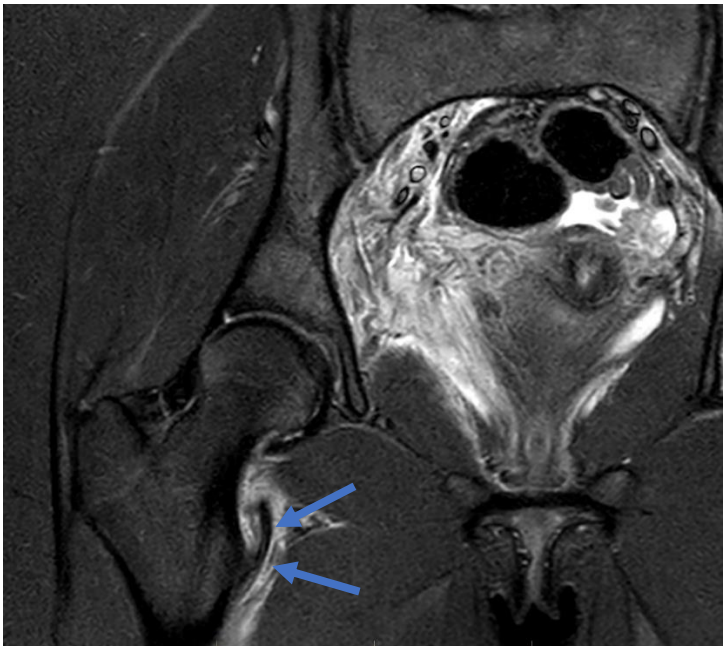
13 year old gymnast presents with right anterior hip pain and antalgic gait, suspected avulsion injury

MRI Findings:

- Large intramuscular haematoma filling iliacus component of iliopsoas
- Blood/fluid tracks around the iliacus and psoas muscles within the pelvis
- Intramuscular tendons and attachment to lesser trochanter is preserved
- No fracture, avulsion, hip derangement



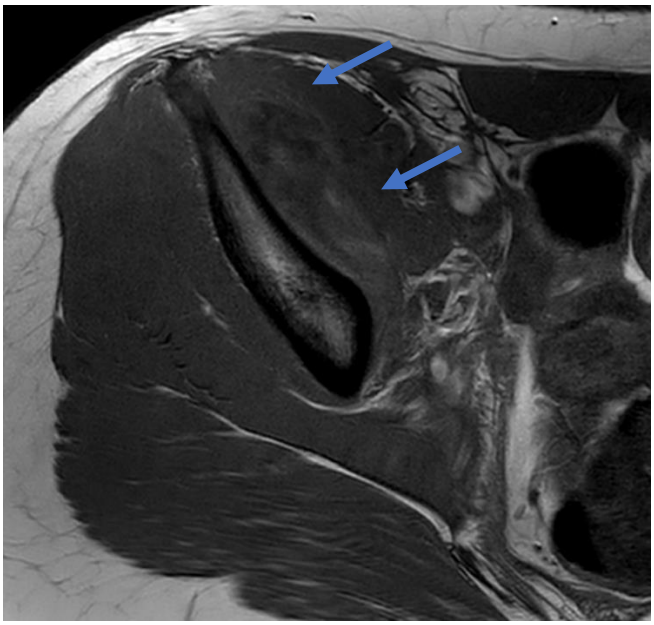


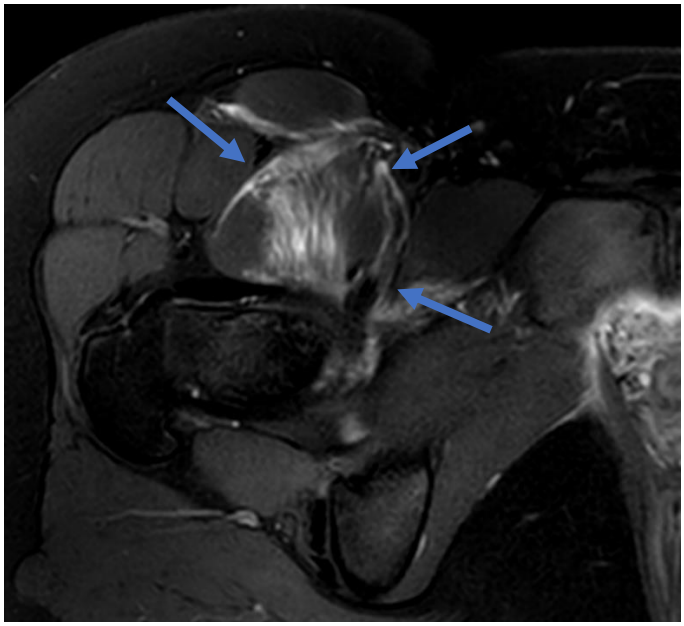


Top left (Axial T2): Blue arrows show the large intramuscular haematoma within the right iliacus component of the iliopsoas. The T2 hypointense rim is a reflection of different maturity of the intramuscular blood products.

Top right (Coronal T2): Coronal imaging shows the T2 hyperintense stranding and oedema from the intramuscular injury tracking through the right hemipelvis

Bottom left (Coronal T2): The attachment of the iliopsoas to the lesser trochanter (blue arrow) is preserved. The T2 hyperintensity outlining this tendinous attachment is from blood/fluid tracking down the iliopsoas.





Axial PD (above, left) shows the poorly defined muscle disruption over the right ilacus. However, the **Axial T2** (above, right) taken more inferiorly exquisitely shows oedema and haemorrhage tracking down the iliopsoas towards the greater trochanter.

Discussion

- Traumatic iliopsoas tear an uncommon/rare cause of hip pain
- Iliopsoas myotendinous junction injury (tear/partial tear) is more common than muscle injury
- Associated with extreme hip flexion in athletes (gymnastics, soccer, AFL)
- Management predominantly conservative

XR

- Limited diagnostic value – may see avulsion of the lesser trochanter in avulsion fracture, or poorly-defined abnormality of the right psoas stripe secondary to haematoma

MR

- Best modality for delineation of muscular injury
- Can identify tendinous attachments and muscular origin
- Intramuscular haematoma will vary in signal characteristics depending on age of blood products

US

- Can identify intramuscular haematoma fairly reliably
- Relies on the patient being slim enough so that the iliopsoas musculature can be identified

DDx

- Avulsion fracture of the lesser trochanter
- Spontaneous retroperitoneal haemorrhage
    - Anticoagulants (most common), direct trauma, systemic inflammation, amyloid
- Intramuscular abscess

Further Reading:

Bui KL et al, Iliopsoas injury: an MRI study of patterns and prevalence correlated with clinical findings, Skeletal Radiol, 2008, Mar;37(3):245-9
Bergman G, Iliopsoas tendinopathy, RadSource MRI Web Clinic, 2015, Accessed 02/04/2019, http://radsource.us/iliopsoas-tendinopathy/
Torres GM et al, Iliopsoas compartment: normal anatomy and pathologic processes, Radiographics 1995; 15:1285-1297
Rubio et al, Spontaneous Iliopsoas tendon tear; a rare cause of hip pain in the elderly, Geriatr Orthop Surg Rehabil, 2016, Mar; (1) 30-32
Bochmann, T et al: Case report: imaging the clinical course of FOPE—a cause of adolescent knee pain. Journal of Surgical Case Reports. Vol 2016: Issue 11.