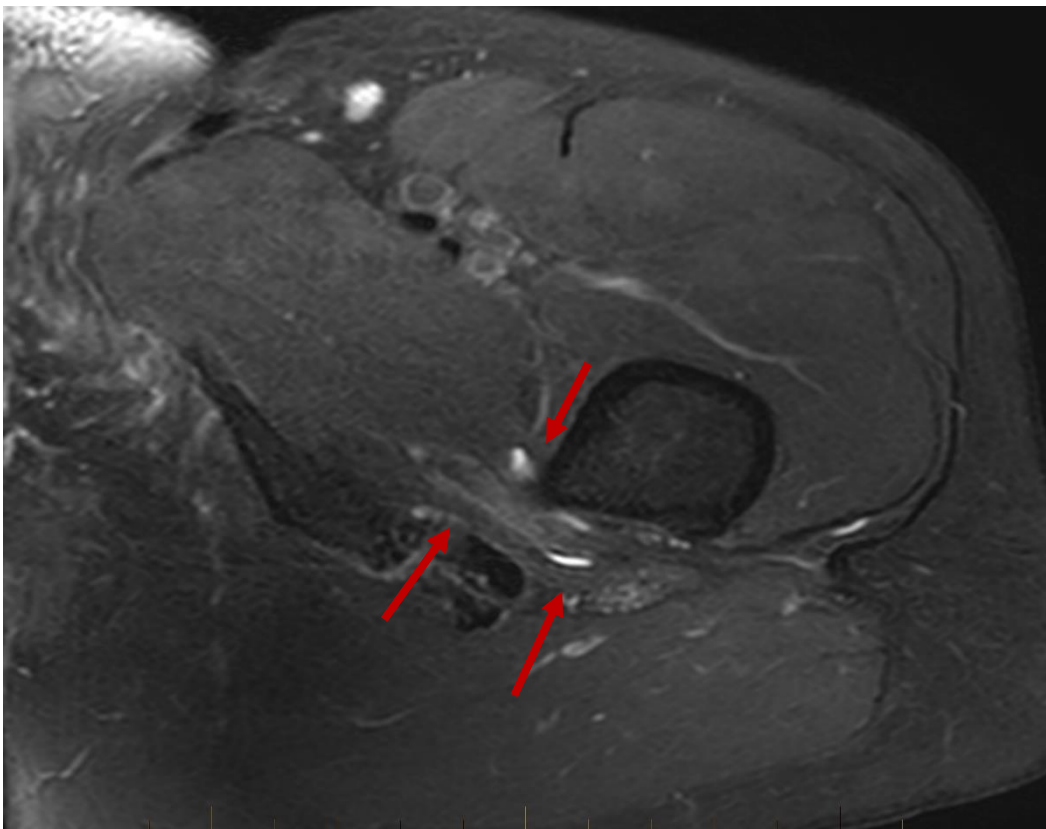
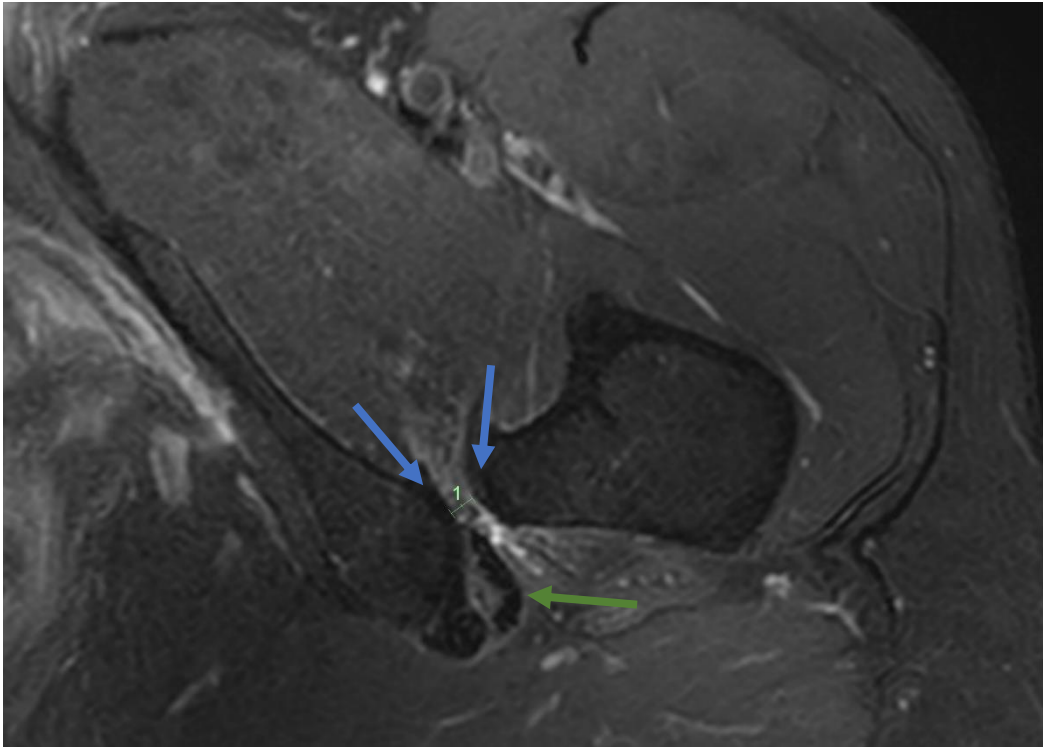
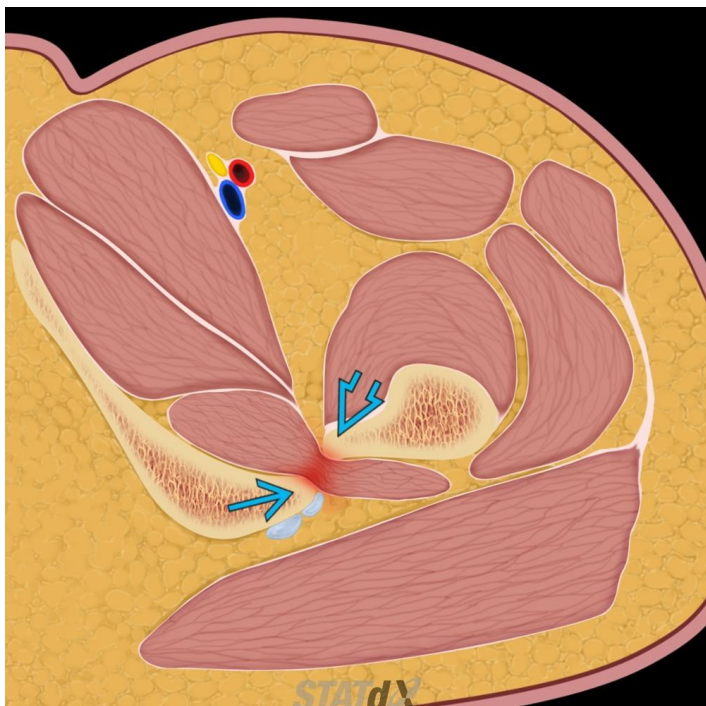


**49yo F elite Ironman athlete with hip impingement symptoms and increasing pain with long distance running**

MRI Findings:

- Ischiofemoral space is markedly narrowed (shown below, measuring 4mm) (blue arrows)
- Oedema and delamination tear injuries through the compressed quadratus femoris (red arrows)
- Hamstring injury - partial tearing of semimembranosus origin (green arrow)





Images on the **LEFT**, taken from an excellent article on ischiofemoral impingement by Dr Blakenbaker, shows a simplified appearance of the ischiofemoral impingement syndrome.

Here, you can see how the quadratus femoris muscle is constricted between the ischial tuberosity (smaller arrow) and the lesser trochanter of the femur (open arrow).

(Source: Blakenbaker D, *Ischiofemoral impingement*, StatDx, Accessed 26/06/2019, DOI:

<https://my.statdx.com/document/ischiofemoral-impingement/b828460c-81ac-4596-aeaa-e3ece4711874?searchTerm=Ischiofemoral%20Impingement> )

## DISCUSSION

- Ischiofemoral impingement syndrome represents the painful crushing of the quadratus femoris muscle between the bony prominences of the ischial tuberosity and lesser trochanter of the femur
- Ischiofemoral space (IFS) is narrowed by the two bony prominences – in our case, it measures only 4mm
  - A normal IFS is somewhat variable, but most use >8mm as a normal IFS
  - Others use quadratus femoris space (QFS) interval instead, a different key measurement
    - Either marker seems reasonable – important to correlate clinical symptoms with imaging findings, and presence of changes in quadratus femoris is key finding on imaging
- The ‘nutcracker’ like effect on the quadratus femoris explains our patient’s muscular oedema and fluid pockets
- Culprits:
  - Congenital
    - Coxa breva
    - Medialisation of femur/acetabulum
    - Prominent lesser trochanter
  - Positional
    - Adduction and internal rotation narrows the IFS
  - Acquired
    - Hamstring enthesophytes / nodular tendinopathy
    - Bony exostosis
    - Superomedial migration of femoral head
    - Hyperostosis

## XR / CT

- Usually normal – may see chronic sclerosis and cystic change of the lesser trochanter and ischium
- May see culprit osseous abnormality – medialised femoral head, abnormal bony excrescence, coxa breva

## MR

- PD sequences (or CT) best show the bony/ligamentous structures which can ‘pincer’ the quadratus femoris
- STIR sequences show the changes of the quadratus femoris

## Further Reading:

Agten et al, *Hip imaging in athletes: sports imaging series*, Radiology, Vol 280:2, 2016

Akca et al, *Ischiofemoral impingement: assessment of MRI findings and their reliability*, Acta Ortop Bras; 24(6):318-321, 2016

Torriani et al, *Ischiofemoral impingement syndrome: an entity with hip pain and abnormalities of the quadratus femoris muscle*, AJR, 193:186-190, 2009

Blakenbaker D, *Ischiofemoral impingement*, StatDx, Accessed 26/06/2019, DOI: <https://my.statdx.com/document/ischiofemoral-impingement/b828460c-81ac-4596-aeaa-e3ece4711874?searchTerm=Ischiofemoral%20Impingement>

Gollwitzer et al, *How to address ischiofemoral impingement? Treatment algorithm and review of the literature*, Journal of Hip Preservation Surgery, 4(4);289-298, 2017