Friday Case Conference
7/31/2015

Aydin Soheili

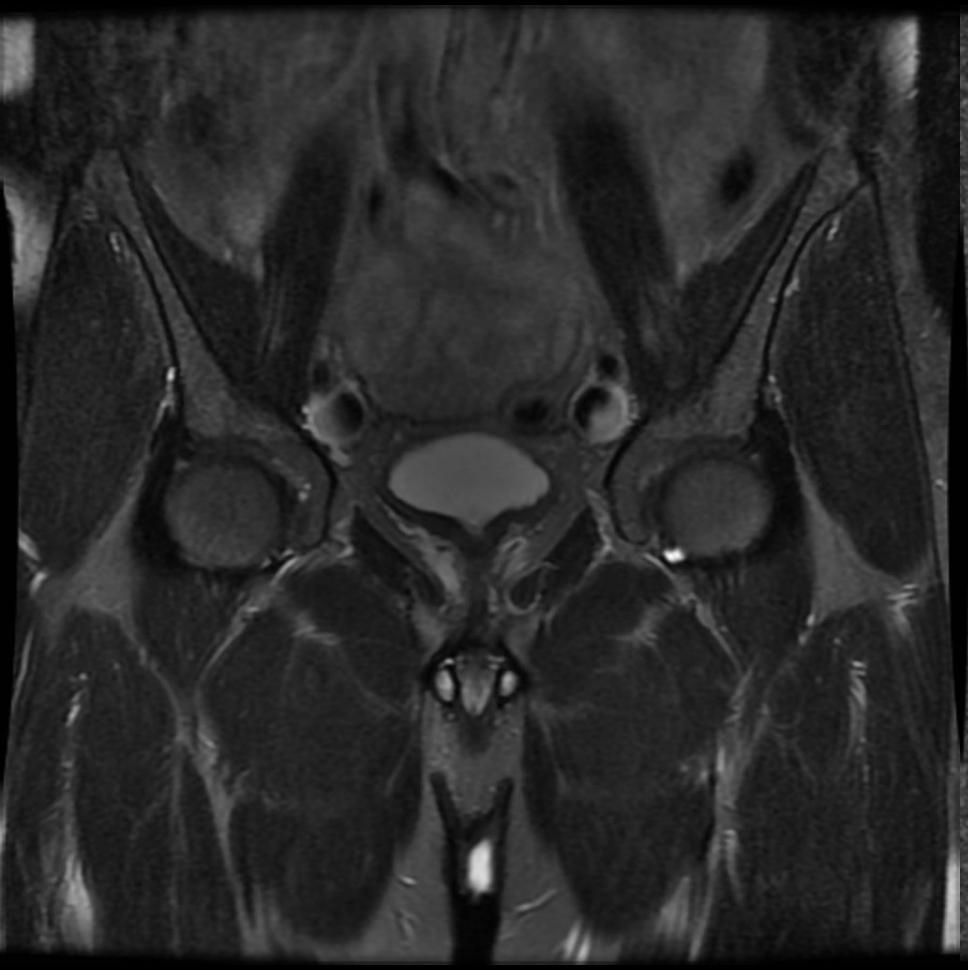
Patient History/Presentation

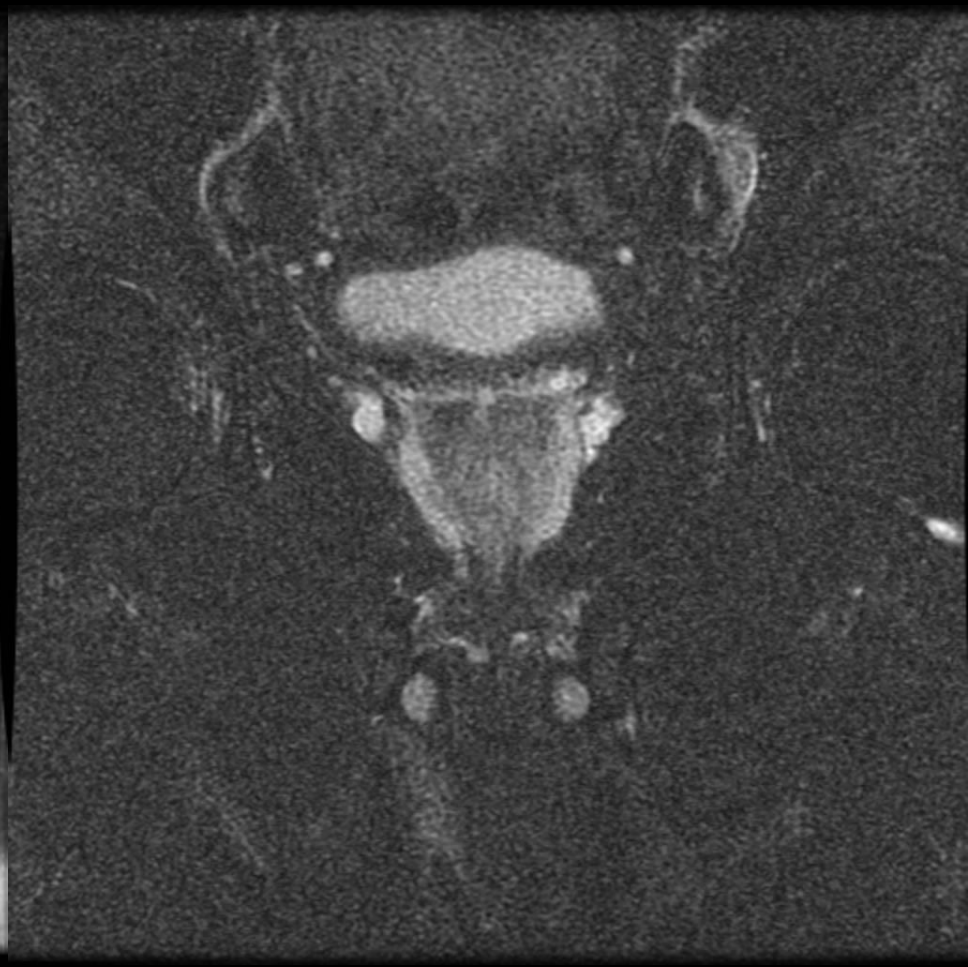
- Patient JK is a 55 yo male with right lower abdominal pain that radiates to the right groin; symptoms started in January of 2015
- The pain began after starting an aggressive abdominal exercise regimen (>150 Sit ups per day)
- Pain is 0/10 at rest and 3/10 when sitting up from laying down and flexing leg
- Patient tried rest followed by yoga, but the pain persisted
- US performed in January of 2015 was negative

Physical Exam

- Hips:
  - Full ROM
  - 5/5 strength
  - No TTP
  - Mild tenderness with hip flexion and while performing a sit up. Tenderness localized to the right anterior groin/right pubic bone area
  - No tenderness with stressing the pubic symphysis or e/o pubic symphysis instability

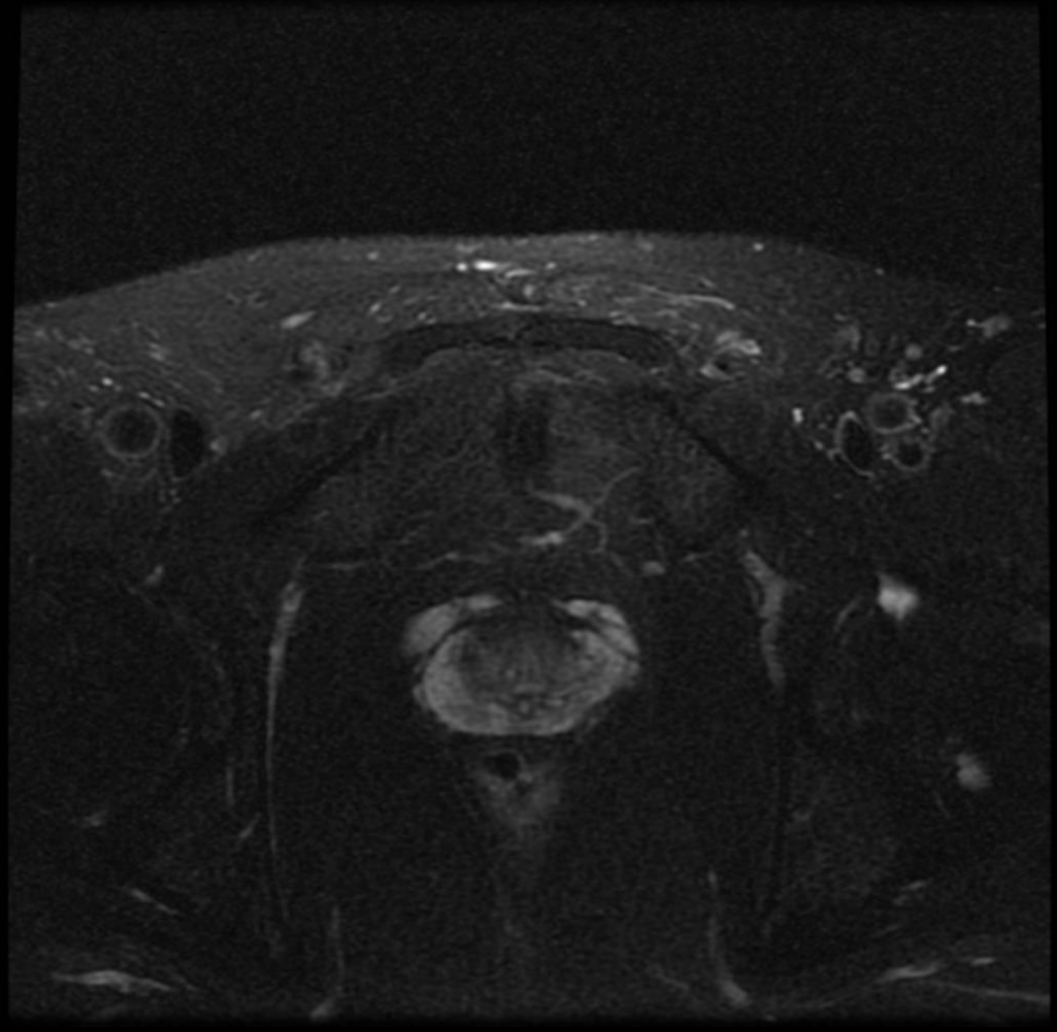
MRI performed on 7/20/2015





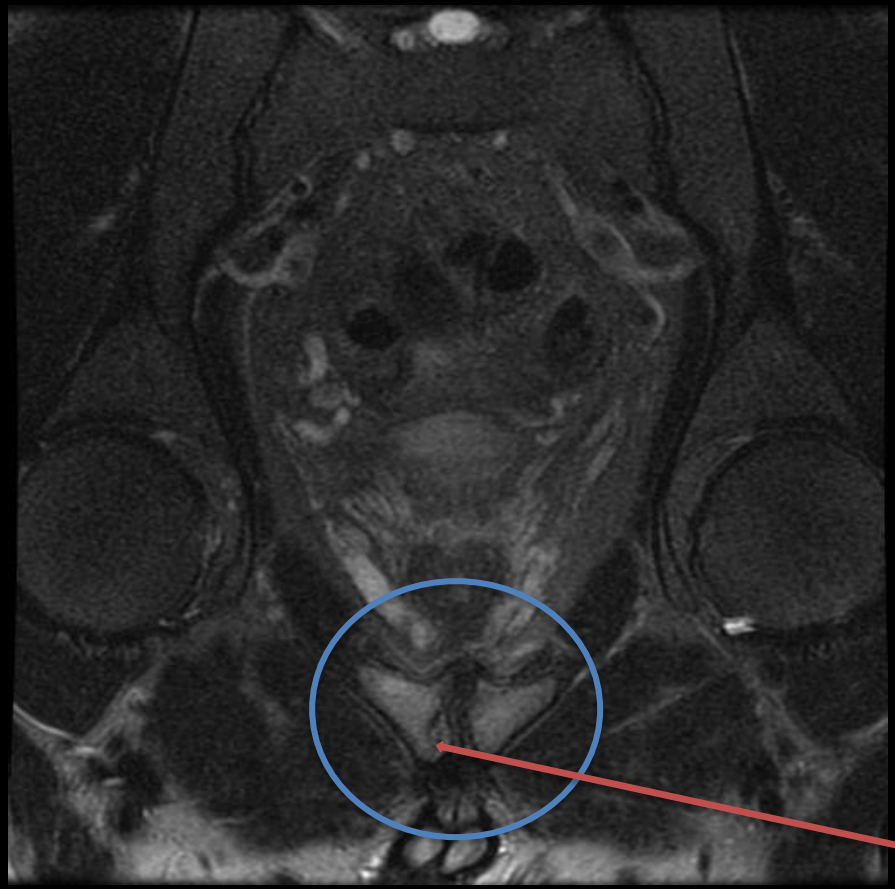
Coronal Wide FOV and narrow FOV fluid sensitive sequences

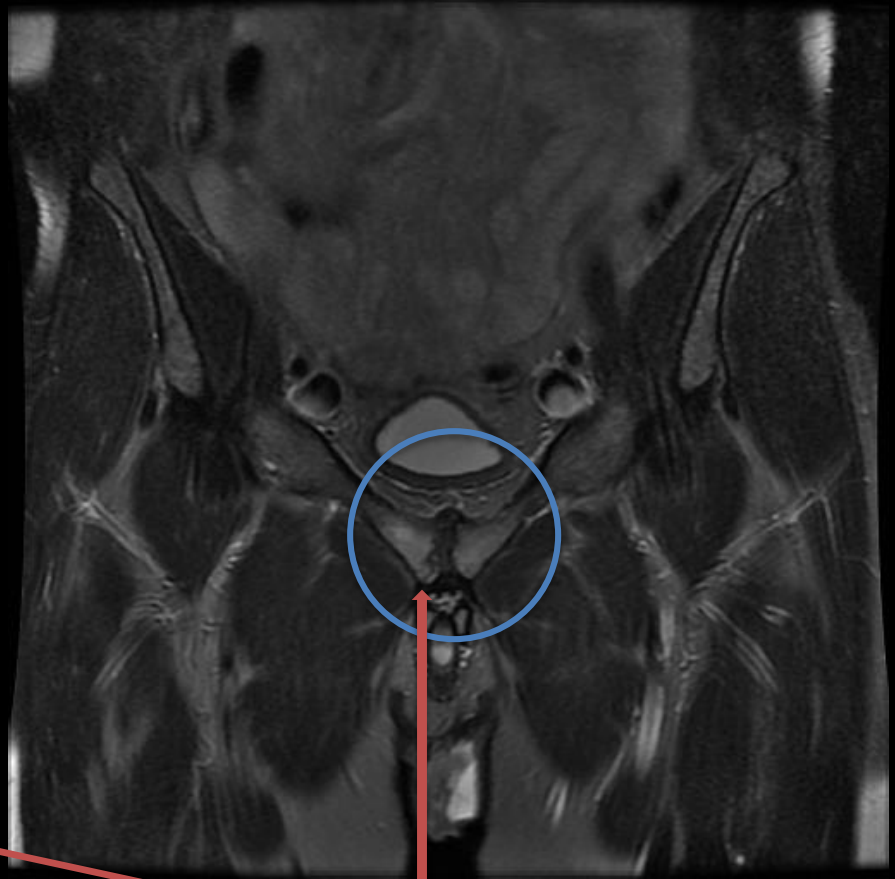
MRI performed on 7/20/2015



Axial fluid sensitive sequence

MRI performed on 7/20/2015

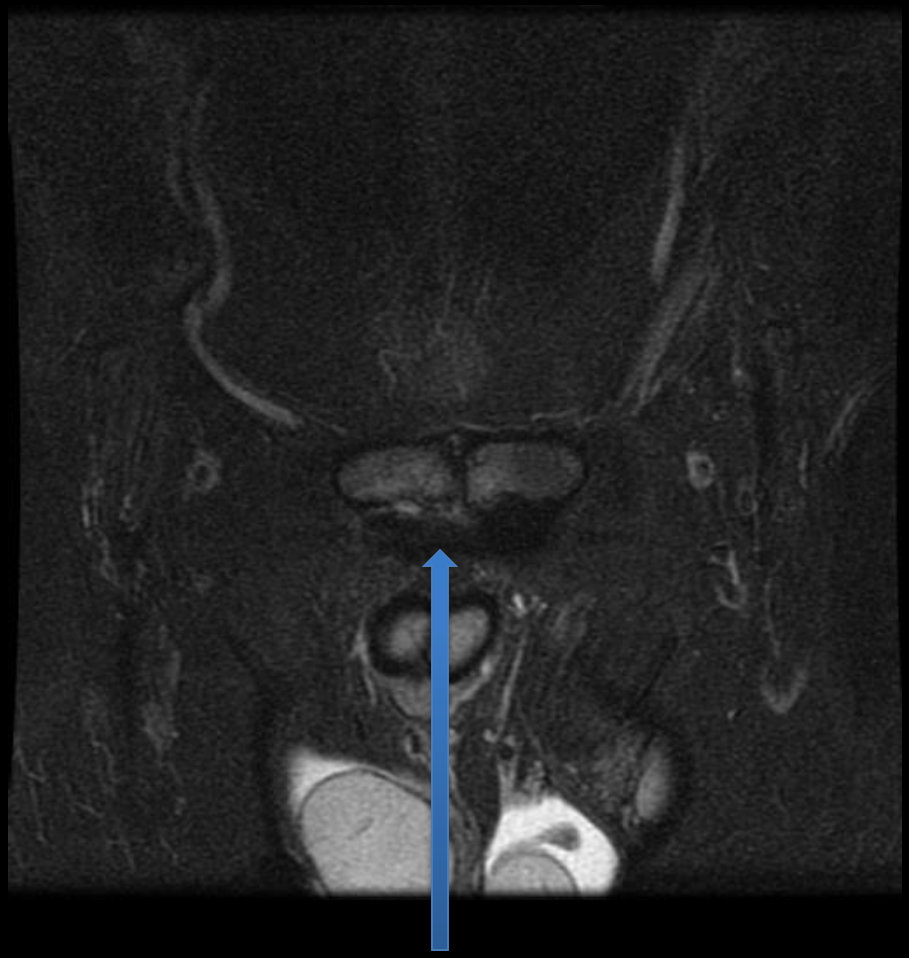


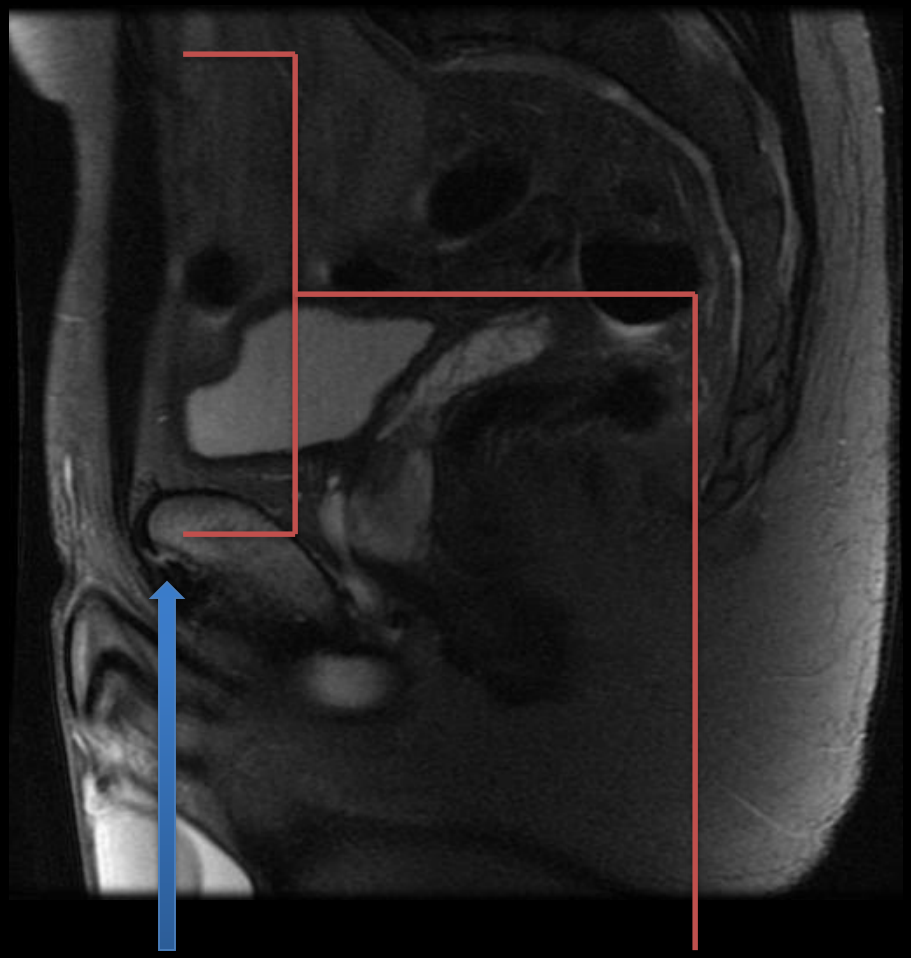


Symmetric parasymphyseal bone marrow edema with irregularity of the subchondral bone plates

Curvilinear areas of low signal intensity along the inferior aspect of the right pubic body, compatible with a stress fracture

MRI performed on 7/20/2015





Tendinosis of the right adductor longus, with a moderate grade partial thickness tear/avulsion from the pubic origin. There is mild reactive edema within the right adductor longus muscle.

Associated rectus abdominus continuum is intact.

Athletic Pubalgia – Teaching Points

- Background Info[1]
  - Common in athletes who perform sports that require twisting at the waist and sudden, sharp changes in direction
  - Between 2%-8% of athletic injuries involve the groin (up to 13% in soccer players)
  - Supposedly 58% of high level soccer players have had a history of groin injury

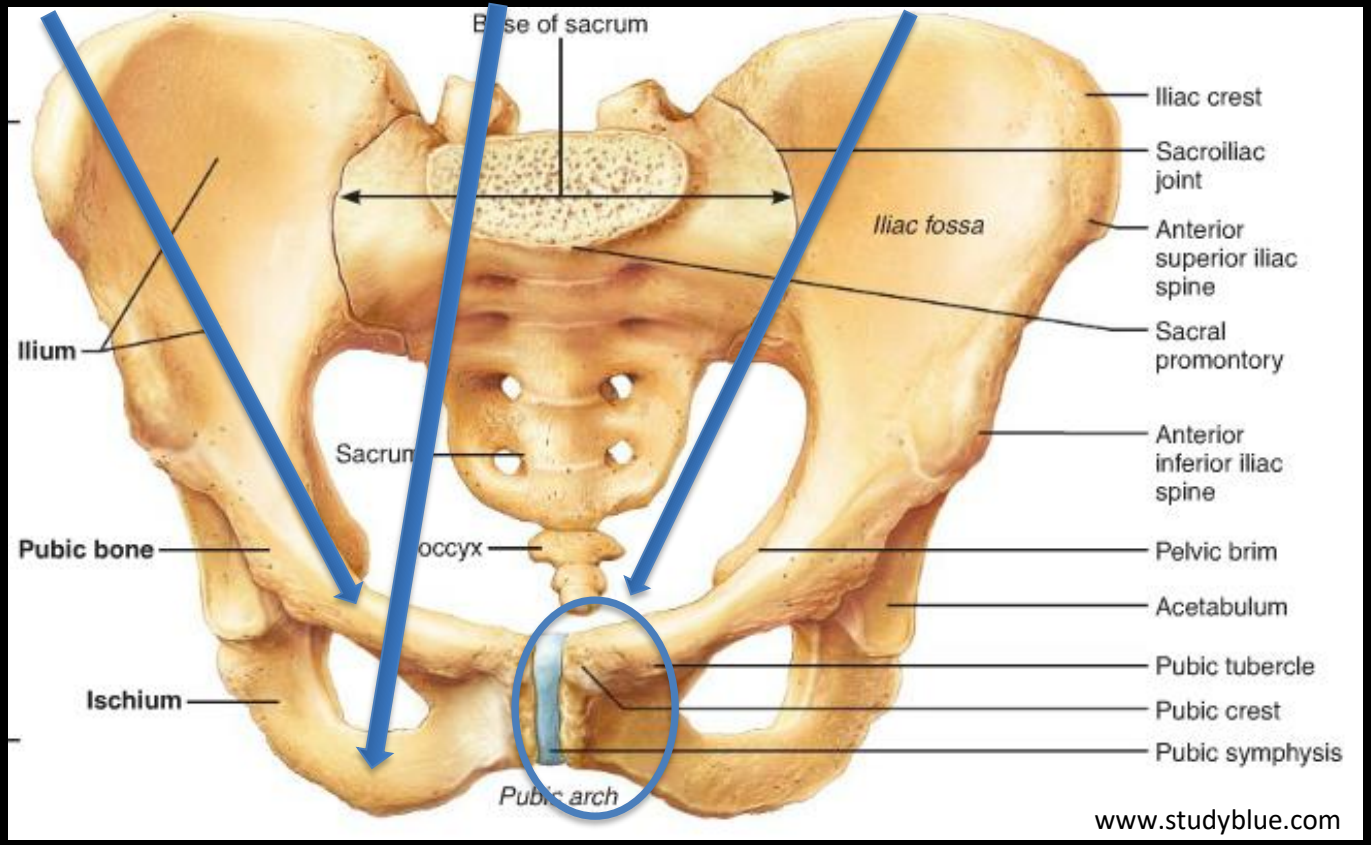
Athletic Pubalgia – Teaching Points

- Background Info[1]
  - The syndrome use to be called Sports (or Sportsman's) Hernia, however patient's that present with symptoms of athletic pubalgia almost never have a hernia (classic misnomer)
  - Common presentation is pain in the inguinal region that may radiate to thigh adductor muscle origins
  - Can be acute, but typically has an insidious onset, as in our case

Athletic Pubalgia – Teaching Points

- Relevant Anatomy
  - Pubic bone has 3 main portions
    - The superior ramus, the inferior ramus, and the body (medial)

The inguinal ligament attaches to the pubic tubercle



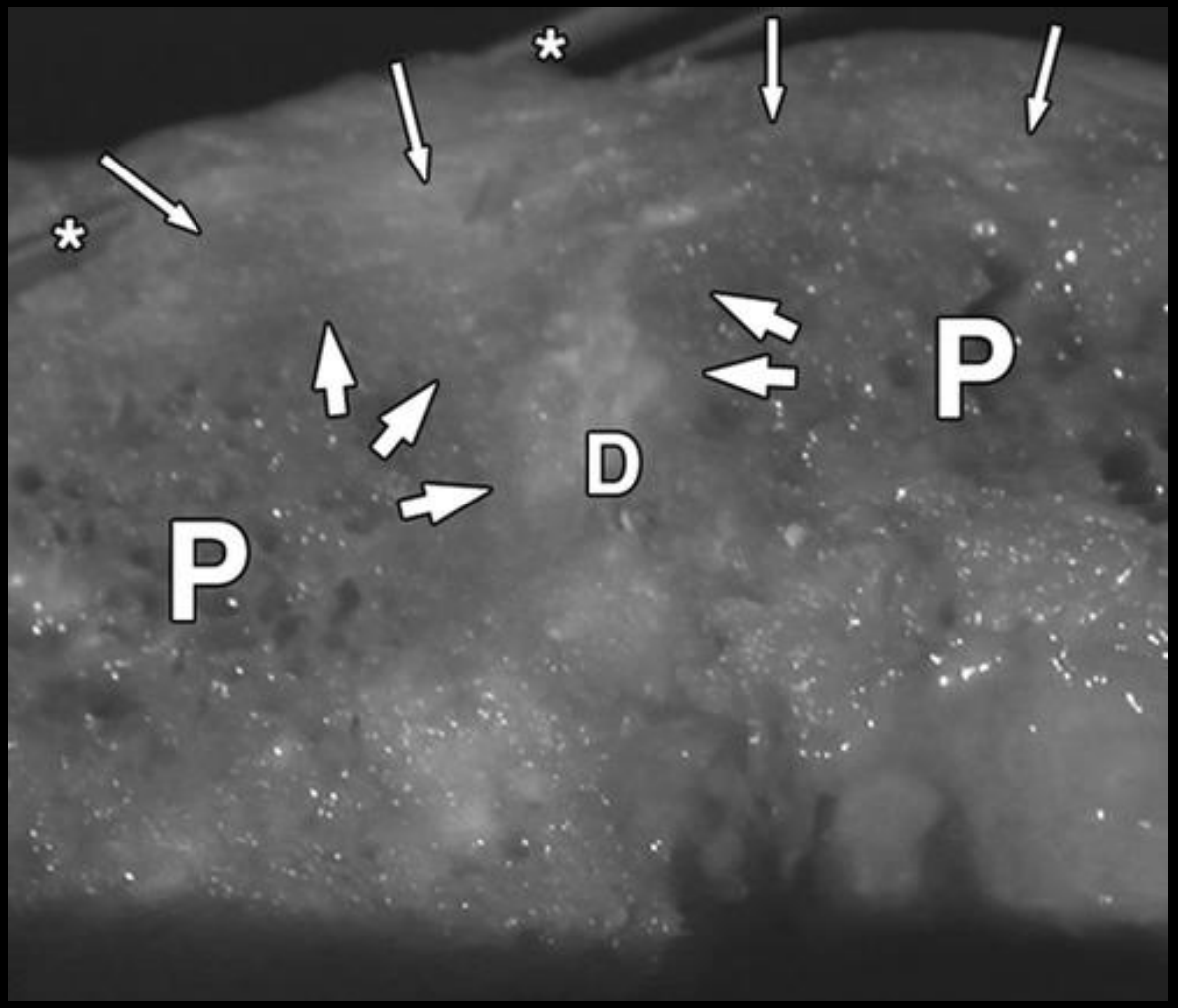
Athletic Pubalgia – Teaching Points

- Relevant Anatomy
  - Pubic symphysis is an amphiarthrodial joint (a joint permitting only slight motion). It is formed by the articulation of the medial borders of the pubic bodies (which are covered by hyaline catilage) and has an articular disk
  - The articular surfaces have ridges and grooves
  - There is no true joint capsule, however there are 4 ligaments about the joint

Athletic Pubalgia – Teaching Points

- Relevant Anatomy

Trabeculae of pubic bones (P) with interdigitating hyaline cartilage (*large arrows*) and fibrocartilage disk (D)[2]



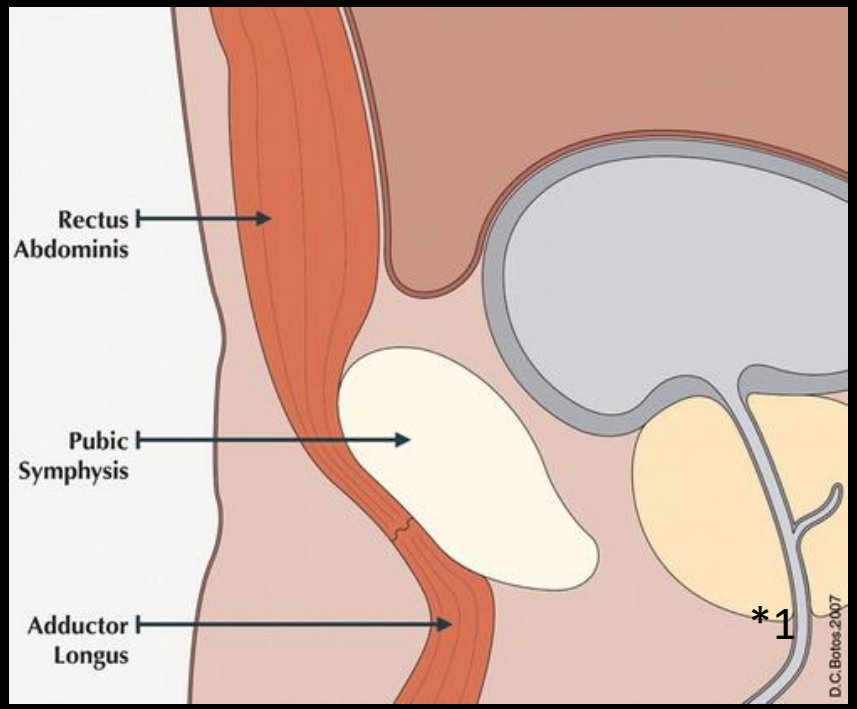
Athletic Pubalgia – Teaching Points

- Relevant Anatomy – 4 pubic ligaments at symphysis
  - Superior ligament – bridges the pubic tubercles
  - Arcuate (inferior) ligament – blends with articular disk. Merges with aponeuroses of gracilis and adductor longus muscles
  - Anterior ligament – also blends with articular disk. Merges with aponeuroses external oblique and restus abdominus muscles
  - Posterior ligament – not important

Athletic Pubalgia – Teaching Points

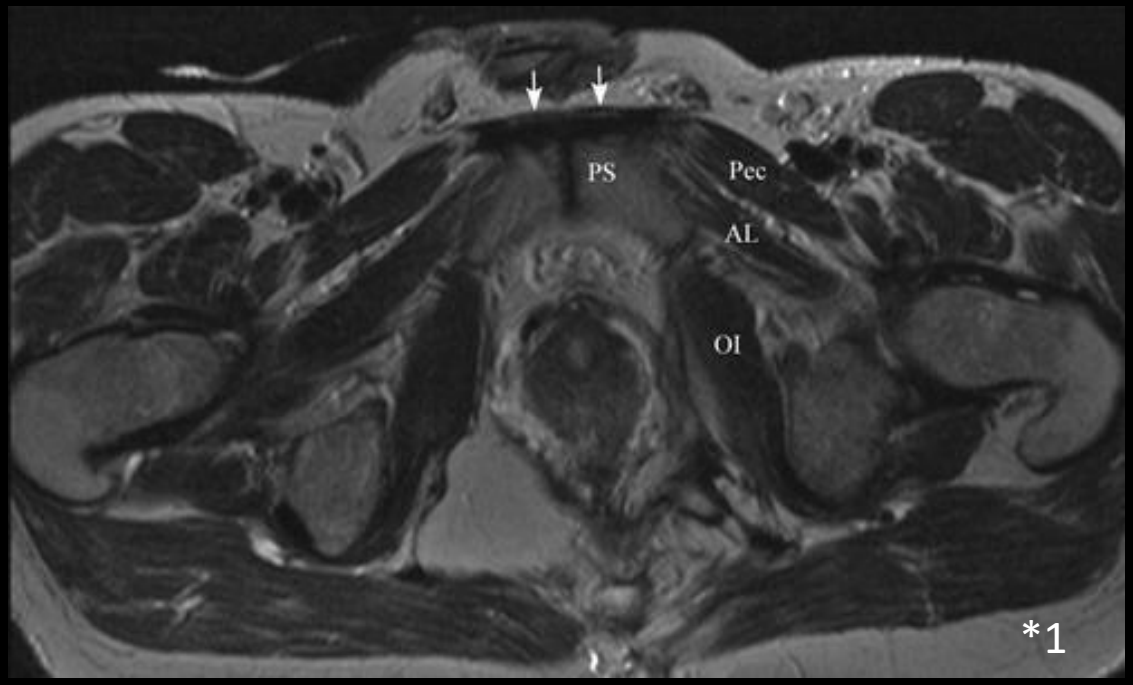
- Relevant Anatomy
  - Multiple muscles attach to the pubic symphysis, including: external and internal obliques, transversus abdominis, rectus abdominis, pectineus, gracilis, adductors.
  - The two most important for maintaining stability of the anterior pelvis are the rectus abdominis and adductor longus, these 2 muscles form a common aponeurosis

Each rectus has medial and lateral tendons. The medial tendon merges with the anterior pubic ligament. The lateral tendon is broader and arises at pubic crest/tubercle



Athletic Pubalgia – Teaching Points

- Relevant Anatomy



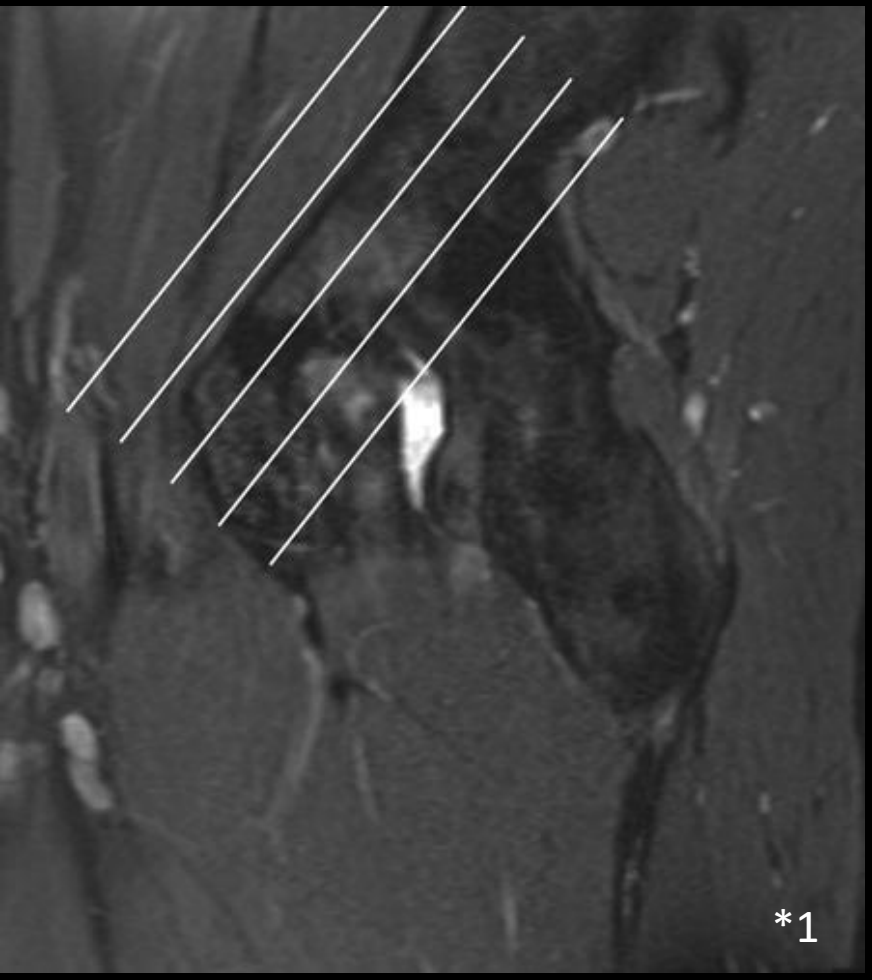
Athletic Pubalgia – Teaching Points

- Relevant Anatomy
  - The rectus and adductor longus are antagonists of one another during rotation and extension at the waist.
  - An injury to one predisposes the opposing tendon to injury because of altered biomechanics and disruption of the anatomic congruity
  - The lateral border of the rectus-adductor longus aponeurosis is very close to the external ring of the inguinal canal (2-5mm). This may be the cause of the hernia like symptoms

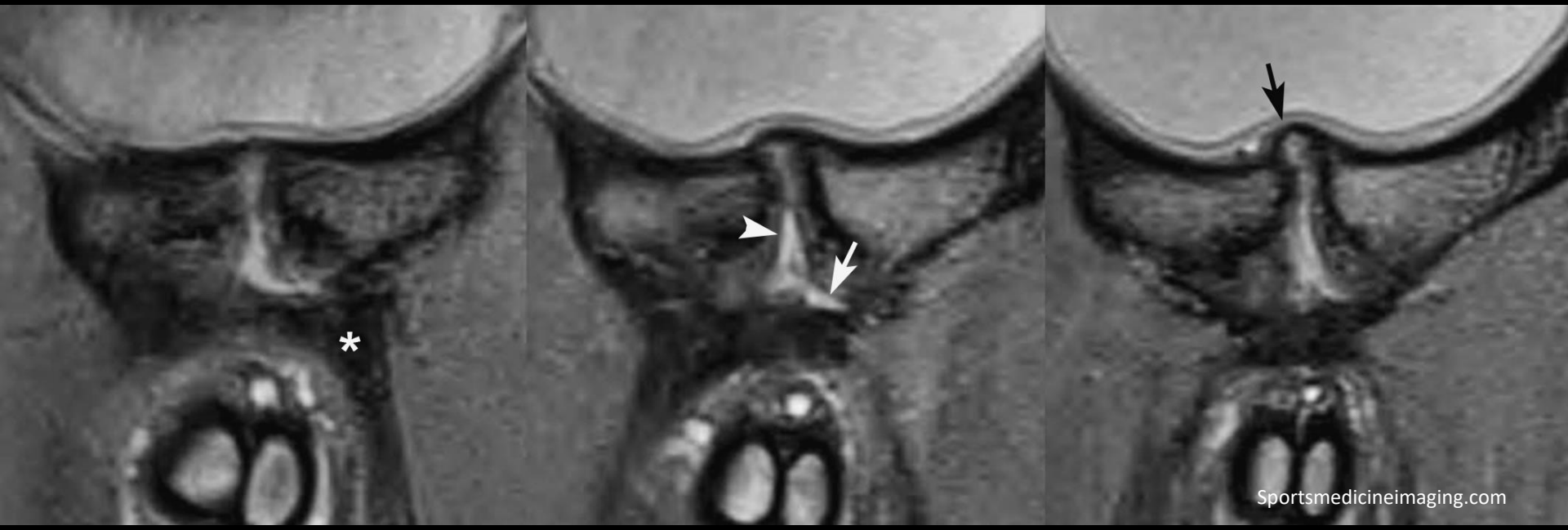
Athletic Pubalgia – Teaching Points

- Proper Imaging Technique
  - Empty bladder
  - A single large FOV sequence to evaluate for possible other causes of the patient's pelvic pain
  - Fluid sensitive sequences in all 3 planes (unlike Tele studies) , preferably with fat suppression
  - Axial oblique sequence is also nice because it allows visualization of the adductor tendons along their long axes

Athletic Pubalgia – Teaching Points



Athletic Pubalgia – Teaching Points



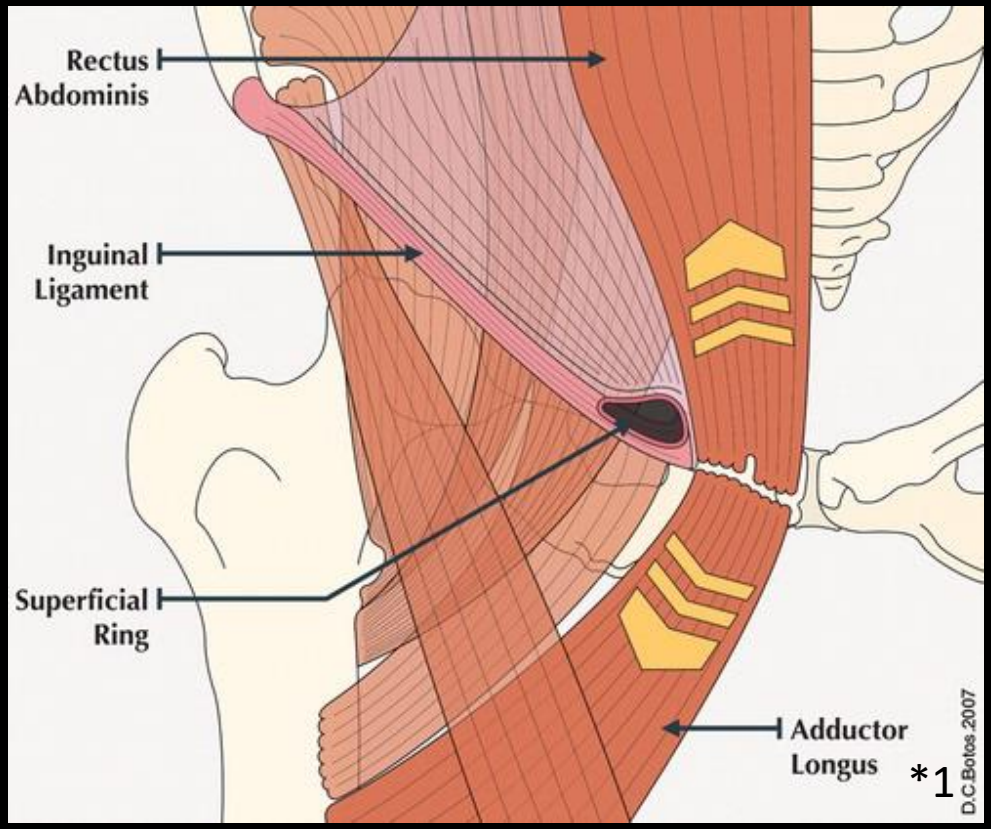
Secondary Cleft Sign

Athletic Pubalgia – Teaching Points

- Treatment
  - Some cases can be treated conservatively either with NSAIDs or steroid injections
  - However, many patients get recurrent symptoms and require surgical treatment
  - Adductor tenotomy kind of works, but not really (in one study only 60% of athletes could resume activity at 3-4 months out)
  - Pelvis floor repair similar to modified Bassini repair: inferolateral margin or rectus is reattached to fascia overlying the anterior pubis. This is commonly performed at the same time as an adductor tendon release or tenotomy (95% success rate)

Athletic Pubalgia – Teaching Points

- Treatment
  - Repair of inguinal hernias to treat athletic pubalgia typically results in recurrent symptoms for patients and they usually require additional surgery.
  - However, herniorrhaphy can work (which is weird). This is thought to be secondary to post-op fibrosis that stabilizes the pubic region near the common aponeurosis



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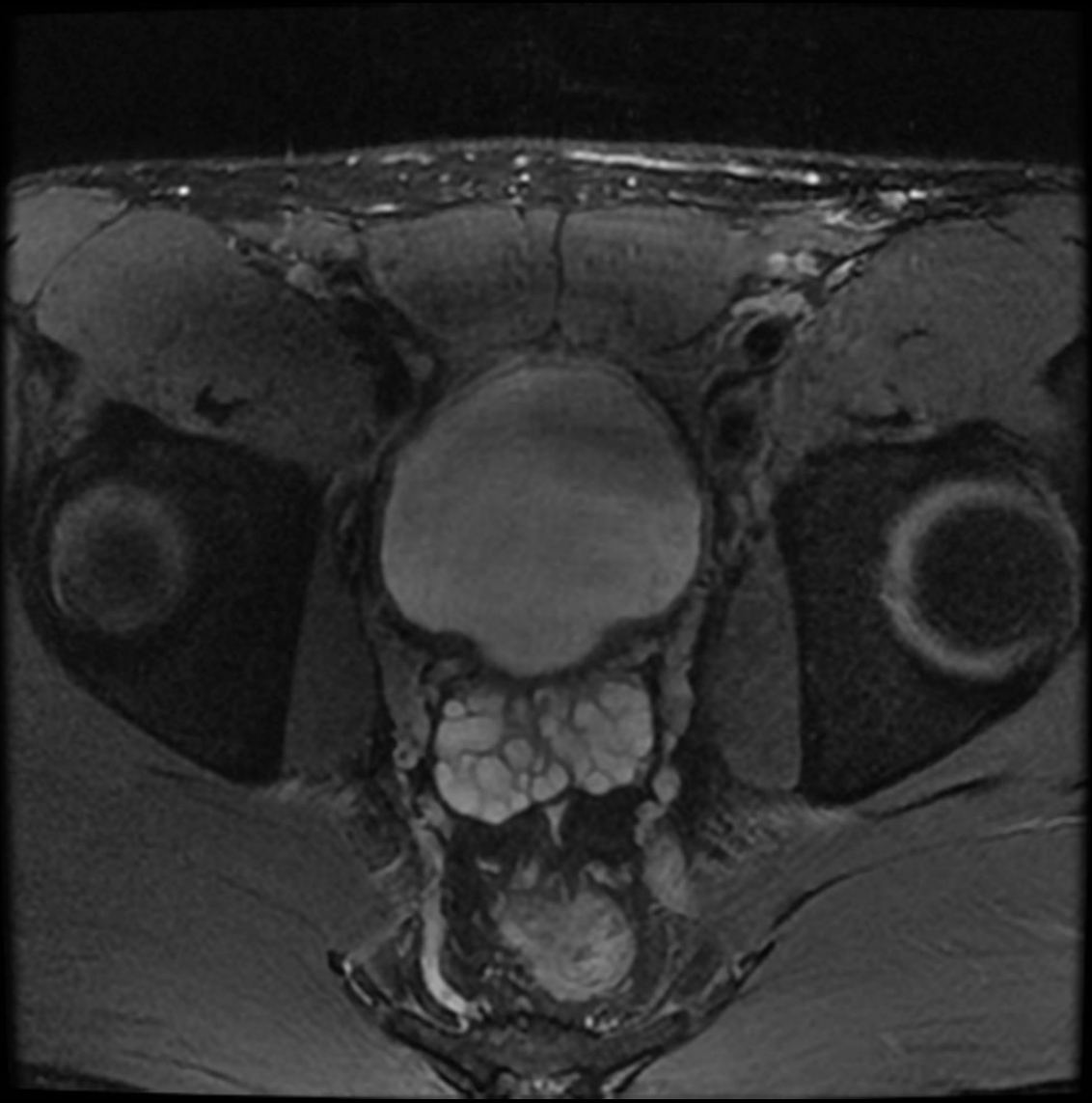
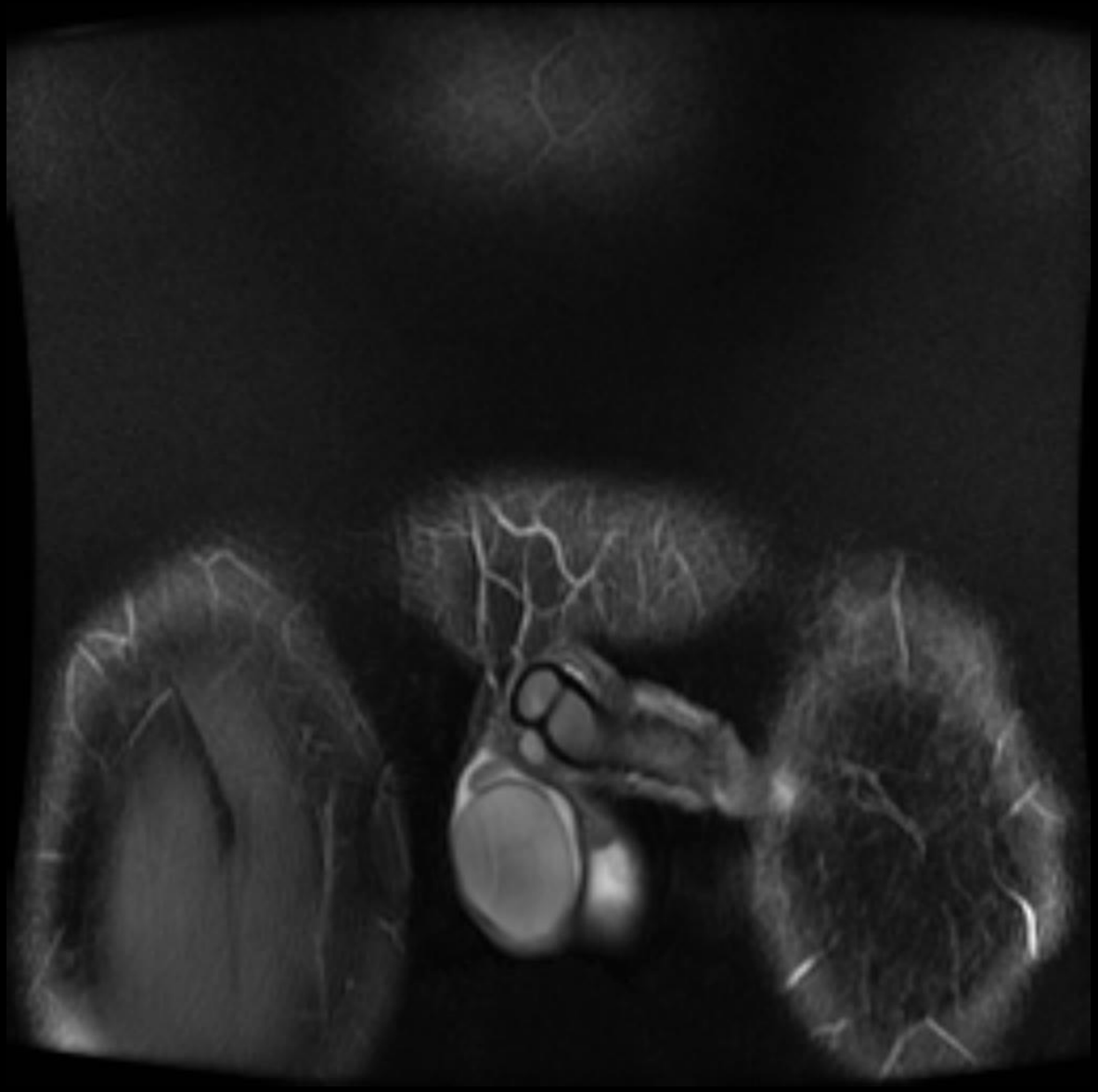
Athletic Pubalgia – Teaching Points

- Differential Diagnoses
  - Osteitis Pubis – the edema in osteitis pubis will typically span the entire pubic body from anterior to posterior, while the edema in athletic pubalgia should only involve the anterior subcortical bone
  - Pubic stress fracture
  - Septic arthritis/Osteomyelitis
  - Labral tear
  - Inguinal hernia

Athletic Pubalgia – Companion Case



Athletic Pubalgia – Companion Case



References

1. **Athletic Pubalgia and "Sports Hernia": Optimal MR Imaging Technique and Findings.** Imran M. Omar, MD, , Adam C. Zoga, MD, , Eoin C. Kavanagh, MD, , George Koulouris, MBBS, FRANZCR, , Diane Bergin, MD, , Angela G Gopez, MD, , William B. Morrison, MD, , and William C. Meyers, MD. Radiographics Sep-Oct 2008, Vol 28, Issue 5

2. **Cadaveric and MRI Study of the Musculotendinous Contributions to the Capsule of the Symphysis Pubis.** Philip Robinson, Fateme Salehi, Andrew Grainger, Matthew Clemence, Ernest Schilders, Philip O'Connor and Anne Agur. AJR, **May 2007, Volume 188, Number 5**

3. **Athletic Pubalgia and the "Sports Hernia": MR Imaging Findings. Adam C. Zoga, MD, , Eoin C. Kavanagh, MD, , Imran M. Omar, MD, , William B. Morrison, MD, , George Koulouris, MD, , Hector Lopez, MD, , Avneesh Chaabra, MD, , John Domesek, MD, , and William C. Meyers, MD. Radiology. June 2008, Vol 247, Issue 3.**

4. www.radsource.com **- athletic pubalgia**