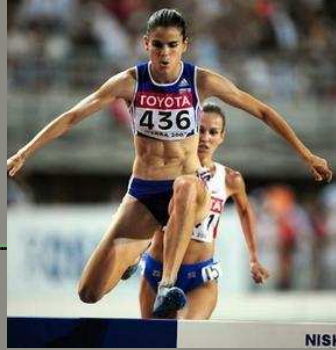




IMAGING OF ATHLETIC PUBALGIA



Dr F Walter
Service d'imagerie Médicale
Clinique d'Eich-CHL



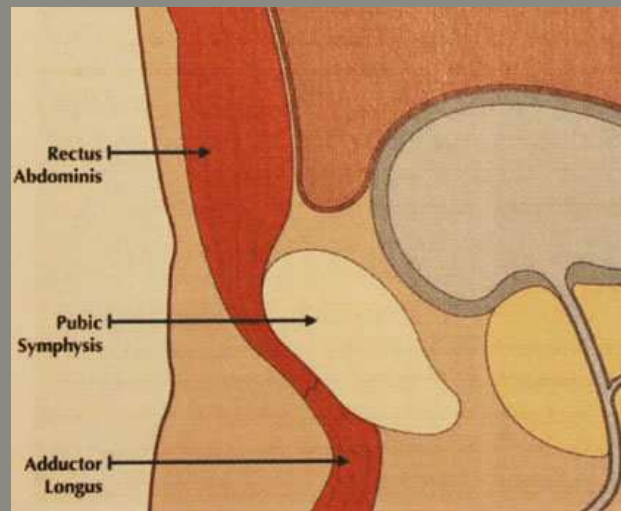
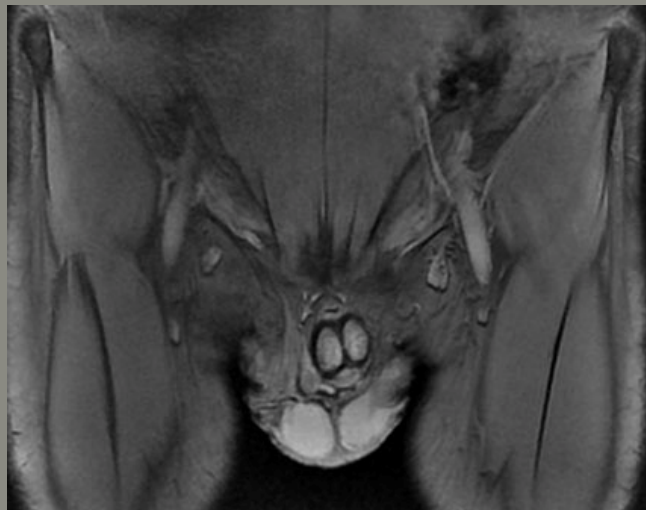
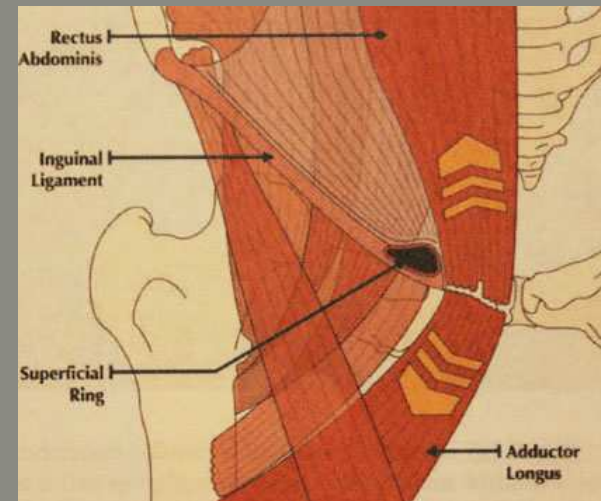
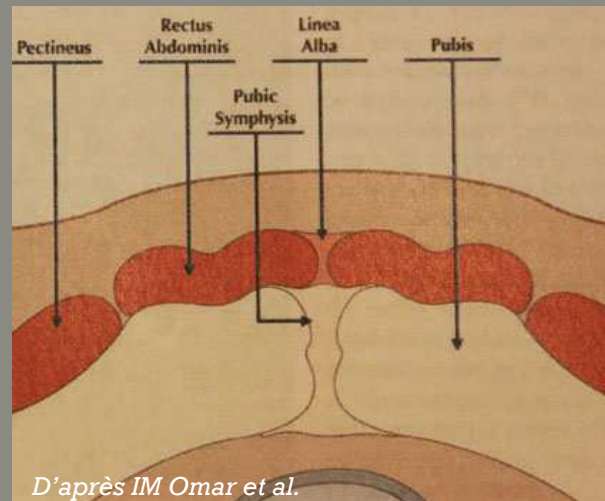
Pubalgia

- Pubalgia or groin pain
- It is not a diagnosis ! But a symptom
- Pain of the pubic and/or groin area with no obvious clinical origin
- Common in sports (soccer, running,)
- 5% sports injuries; soccer : 15% players (58% in medical history)

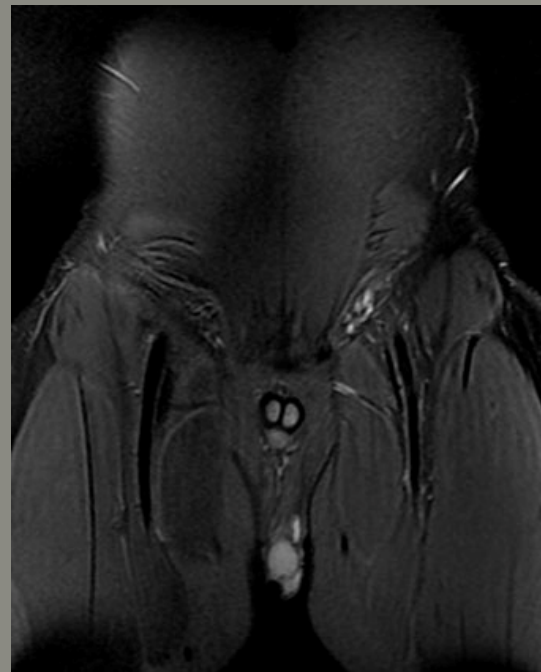
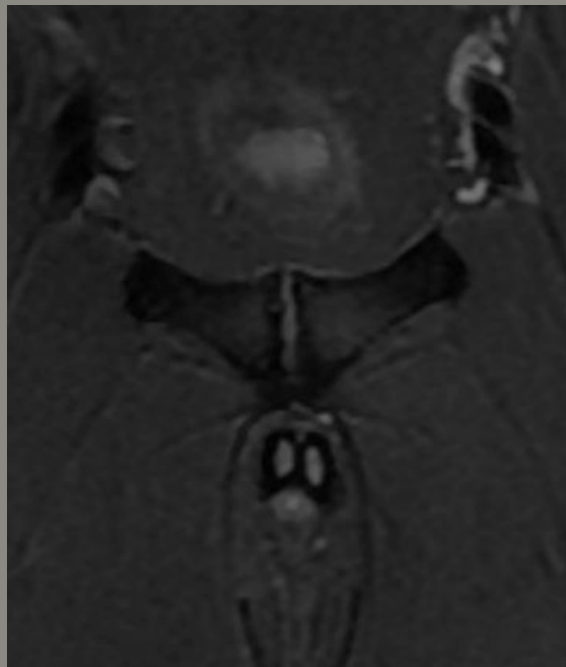
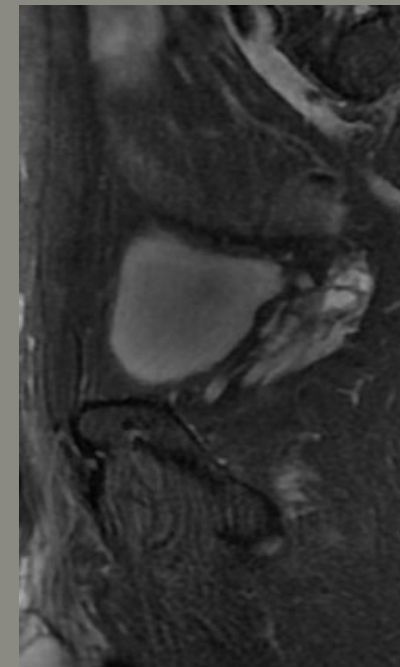
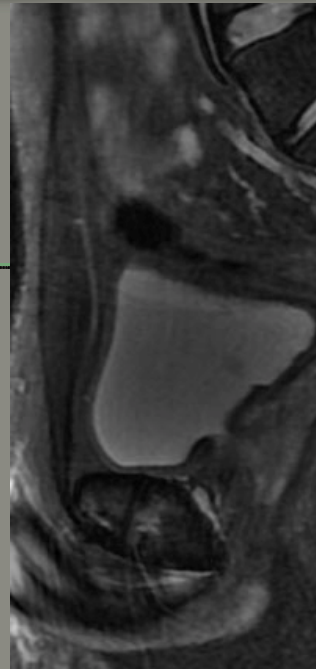
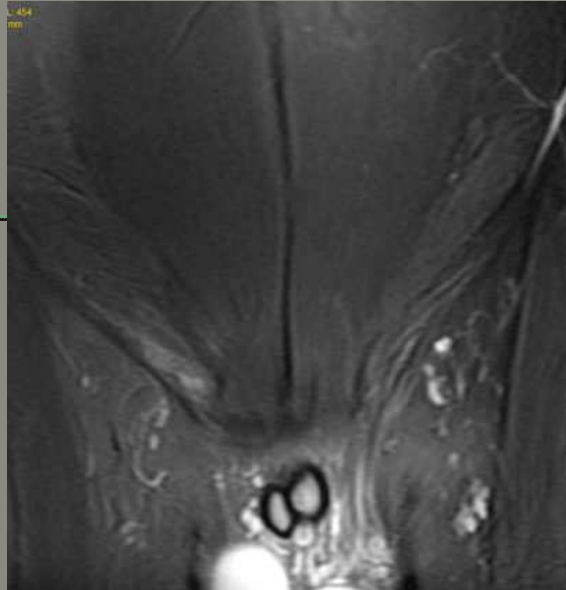
Pubalgia

- Several causes
- Complex anatomy and bio-mechanics
 - pubic bone and joint,
 - musculo-tendinous insertions (rectus abdominis, adductor longus, gracilis, conjoint tendon)
 - Inguinal ligaments and ring
 - Stabilization of the anterior pelvis
 - Increased mechanical stress, repetitive microtrauma
- Clinical Diagnosis may be difficult
- Imaging techniques can help usefully

Pubalgia



Pubalgia



Imaging Techniques

- X-Ray imaging
- Ultrasonography (US)
- Computed Tomography (CT)
- Magnetic Resonance Imaging



X-Ray Imaging

- Digital Radiography
- Pelvis : AP, pubic joint (ap, monopodal r/l), oblique sup/inf
- Pelvis (spine) : P
- Pelvis statics,
- pubic joint, instability
- Hip, sacro-iliac joint, soft tissu Ca

X-Ray Imaging

B



R



L



X-Ray Imaging



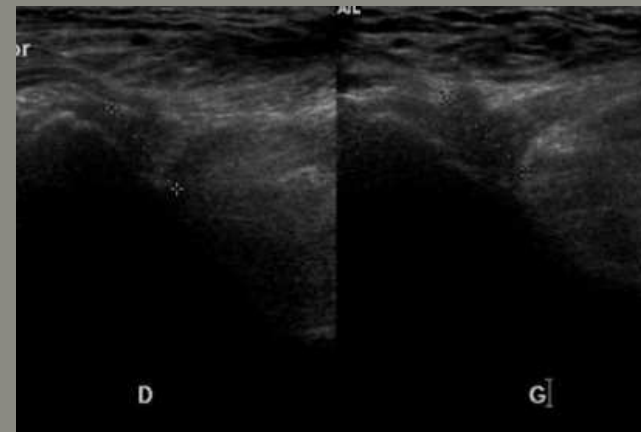
Sacral angle



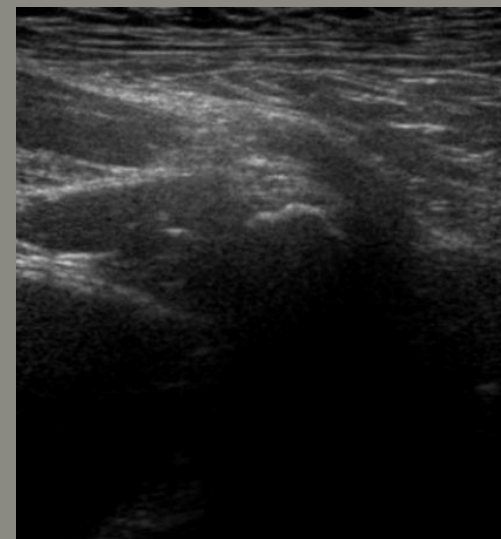
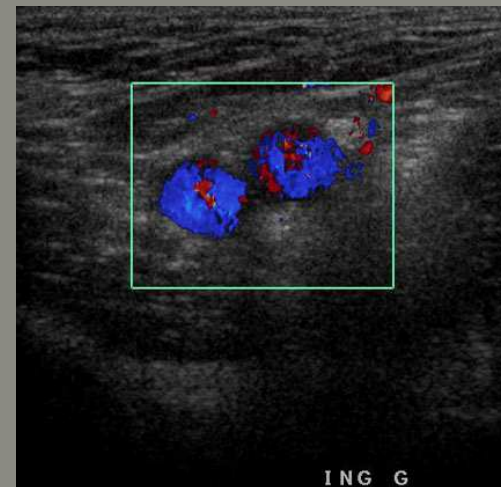
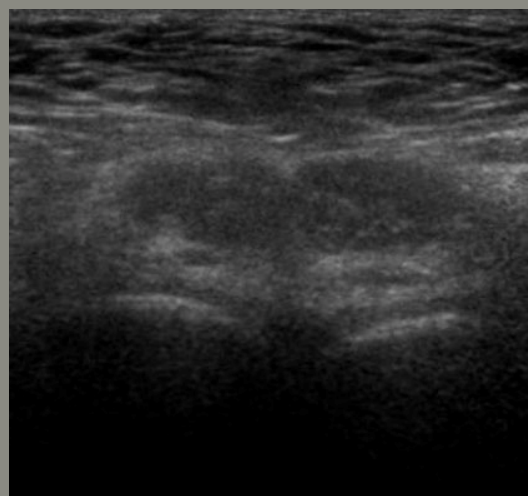
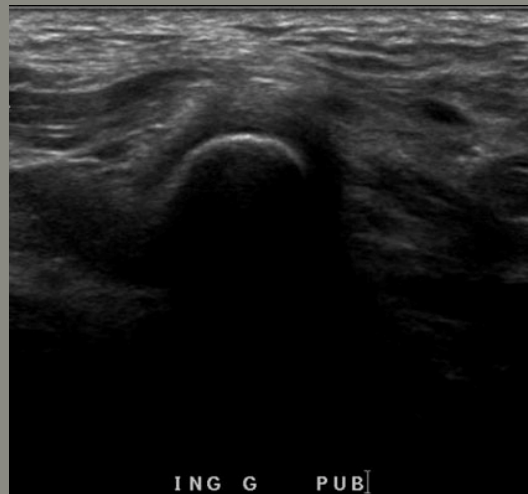
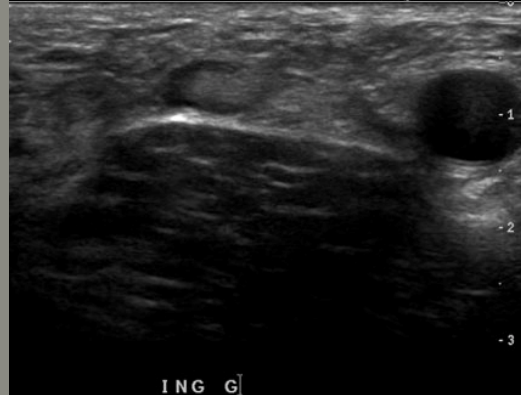
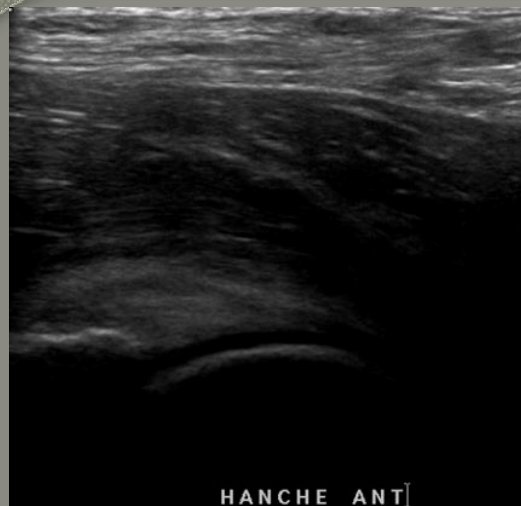
Pelvic version

Ultrasonography

- High resolution imaging
- Doppler imaging (color /power/energy)
- Specific probe, axial/sagittal/oblique
- Soft tissue, bone surface, joint
- Comparative
- Dynamic evaluation
- Subtle signs



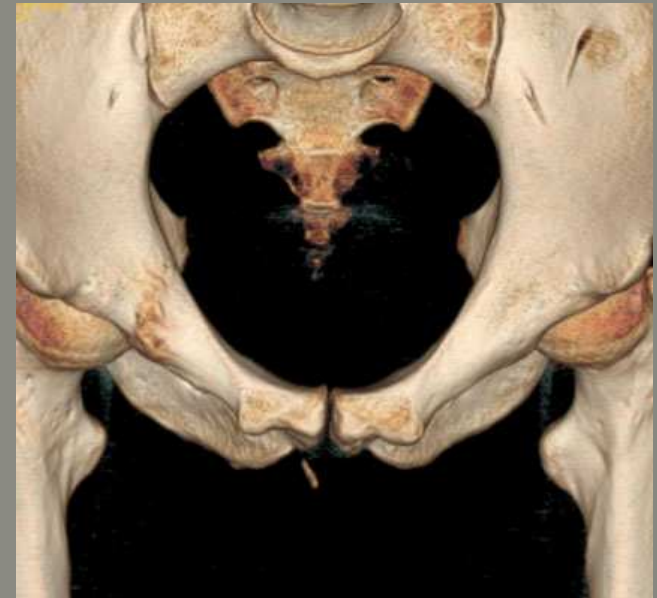
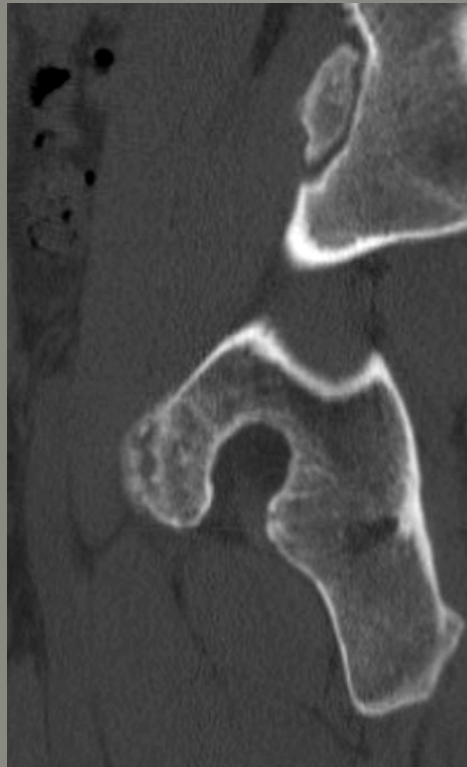
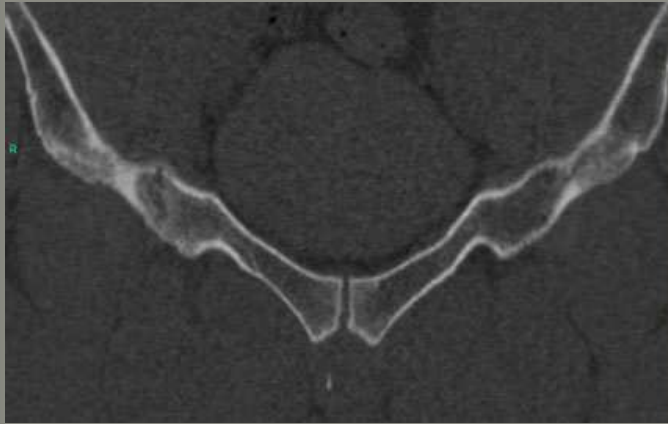
Ultrasonography



Computed Tomography

- Multislice/volumic CT
- Low Dose CT
- Bone, joint assessment +++
- Soft tissue
- Hernia +++ (dynamic, Valsalva)
- Multiplanar reconstructions 2D
- VRT 3D

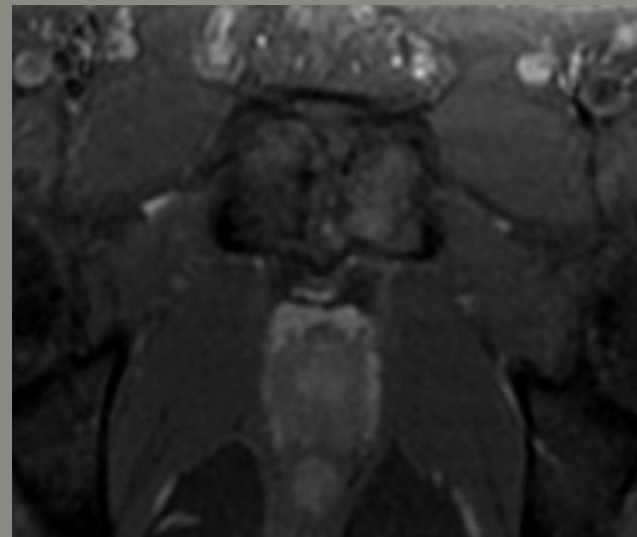
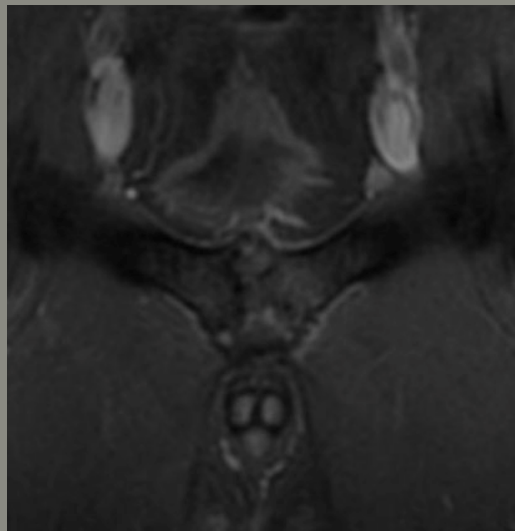
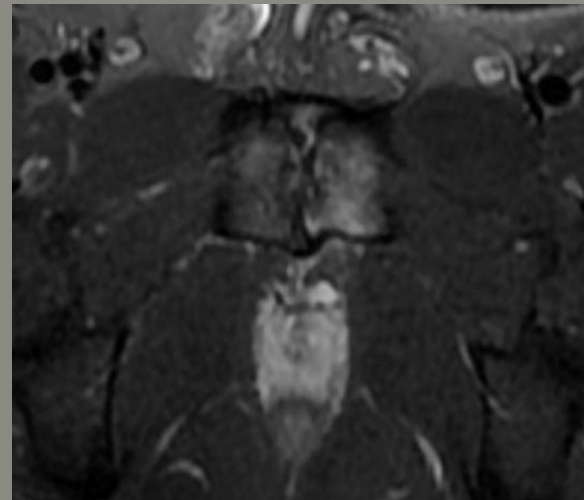
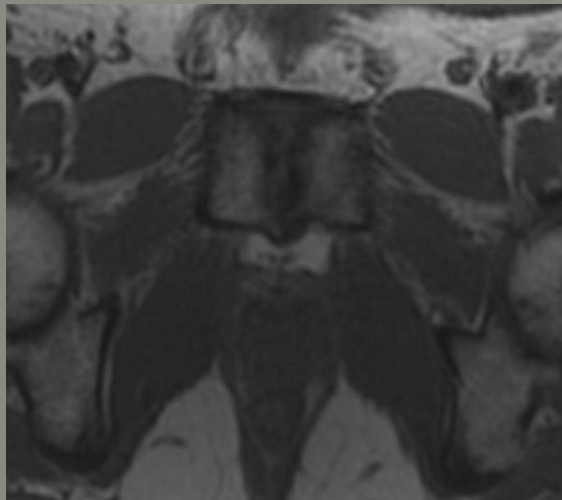
Computed Tomography



Magnetic Resonance Imaging

- 1.5 T or better 3 T, T1 w, T2 w FS, Diff w
- Specific pelvis coil
- Global pelvis assessment
- High resolution imaging : pubic joint
- Contrast enhanced imaging T1 w FS
- Dynamic assessment
- Bone marrow+++, joint, soft tissues

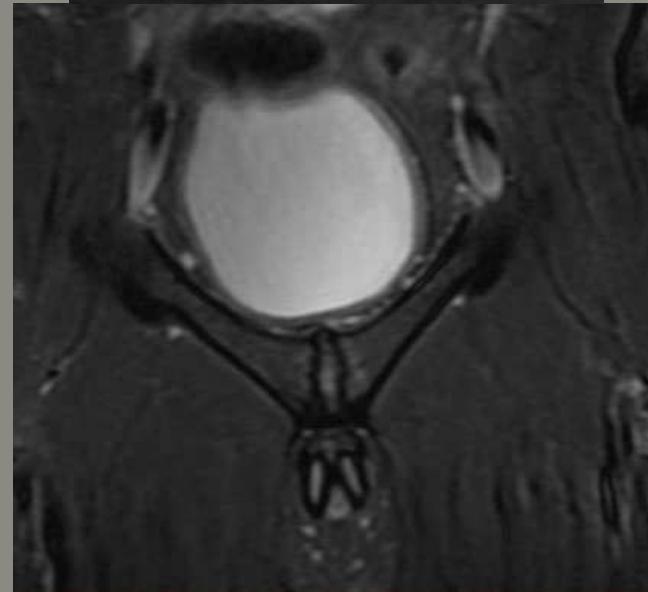
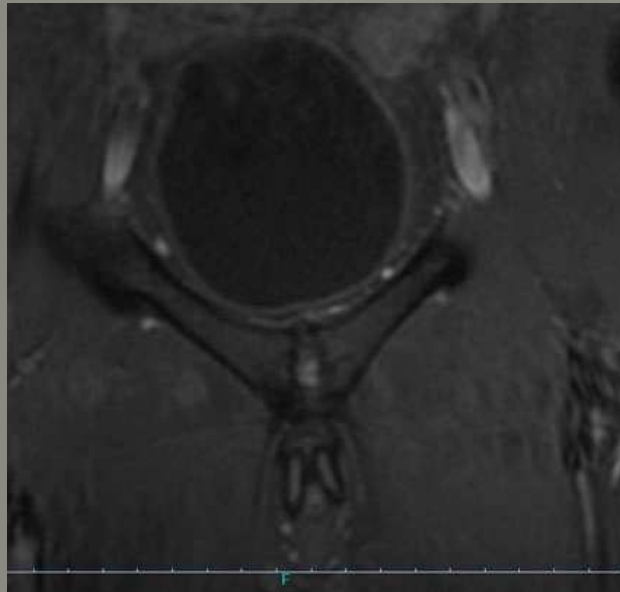
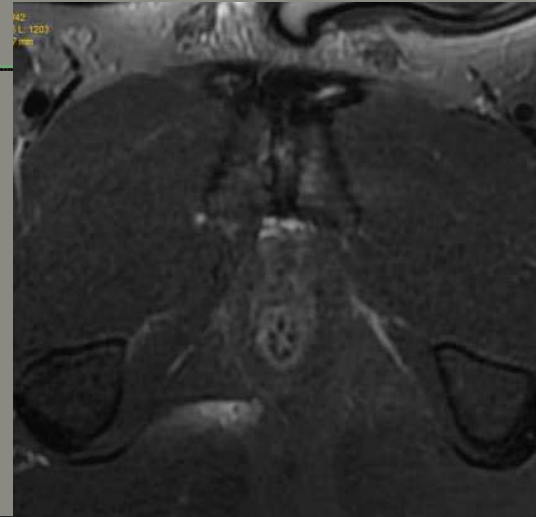
Magnetic Resonance Imaging



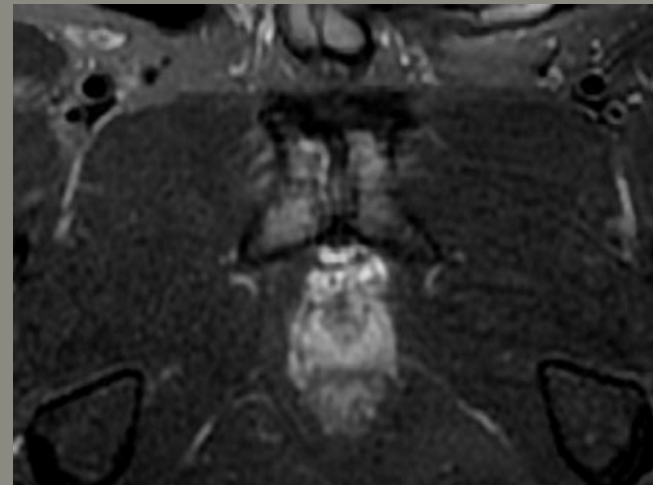
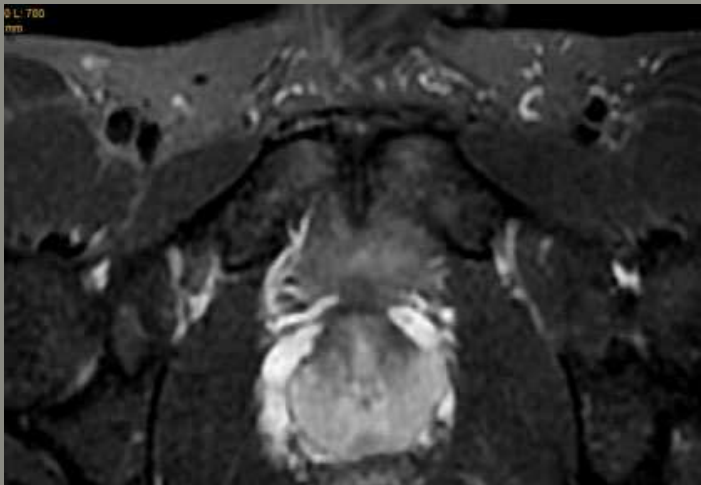
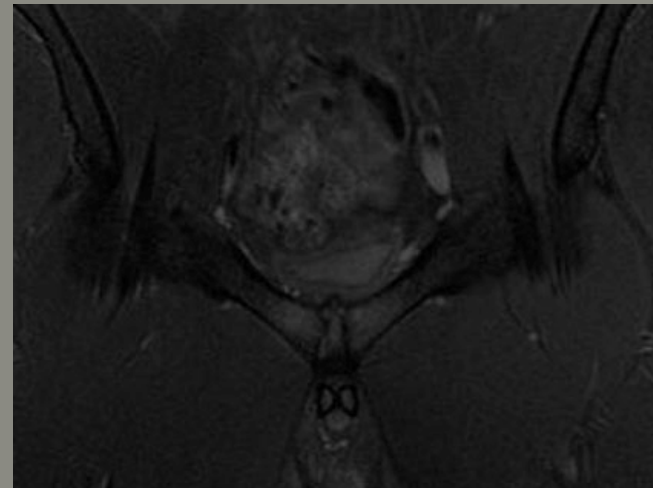
Pubic Osteo-artropathy

- ◉ Arthritis pubis +++
 - Disc degeneration «secondary cleft sign »
 - 4 grades Brunet classification : articular surface
 - Imaging lesions \neq clinical findings
 - Asymptomatic imaging findings
 - Associated lesions : tendinopathy, hernia
- ◉ Osteitis pubis ++
- ◉ Pelvis stress fracture
- ◉ MRI+++, Rx, CT

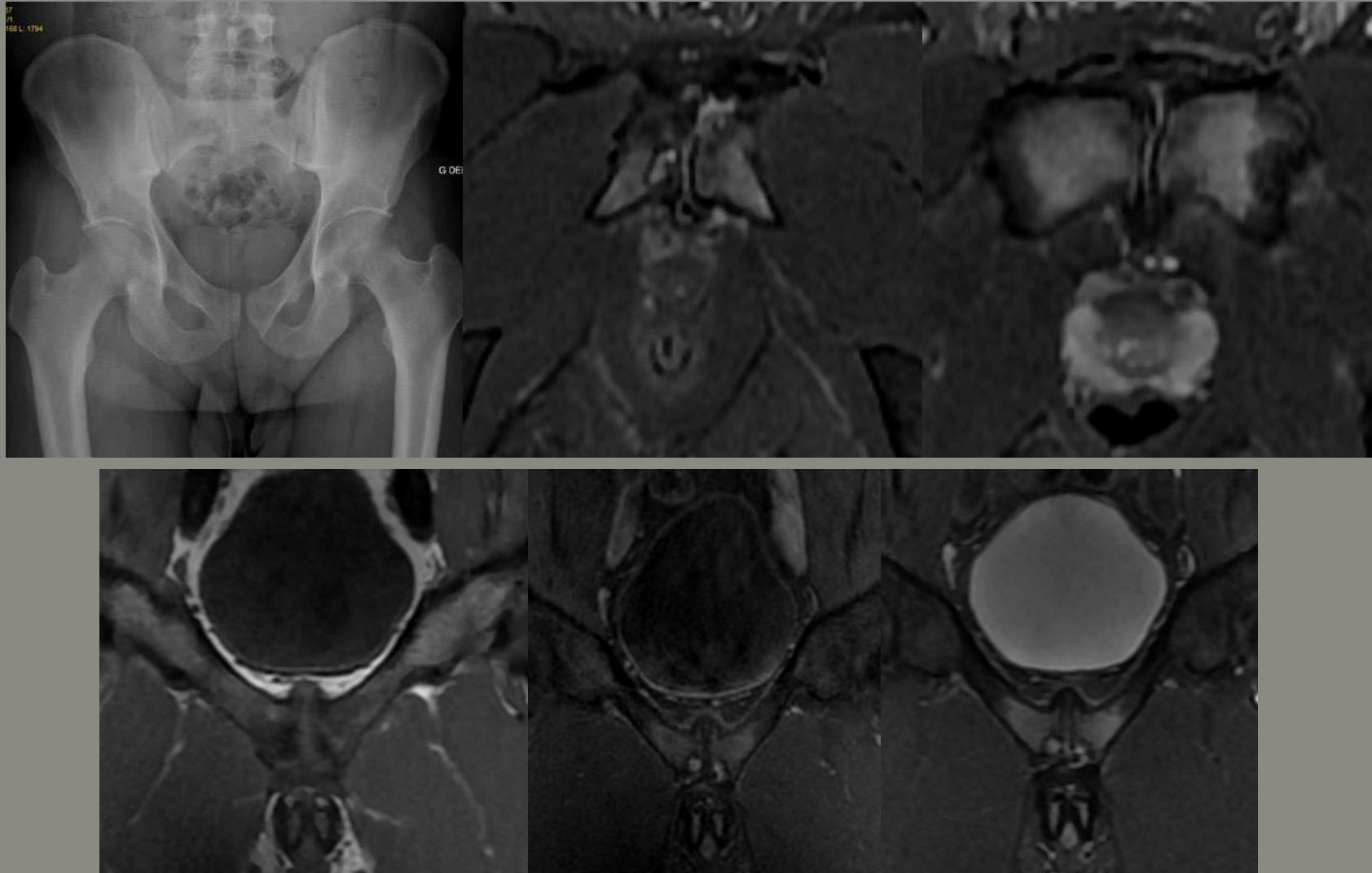
Pubic Osteo-artropathy



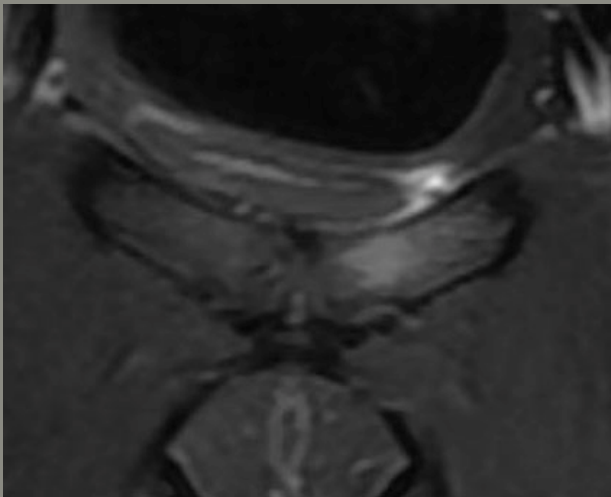
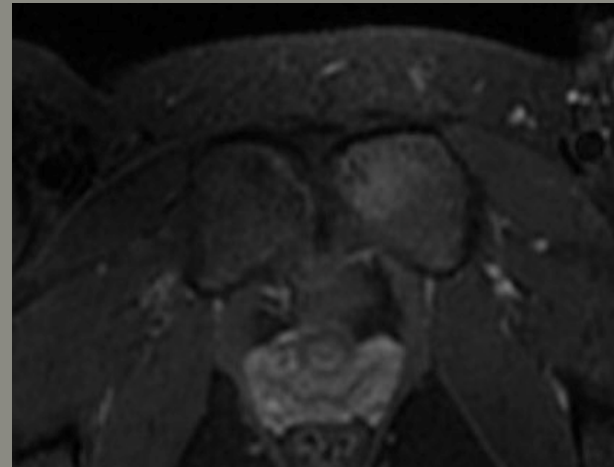
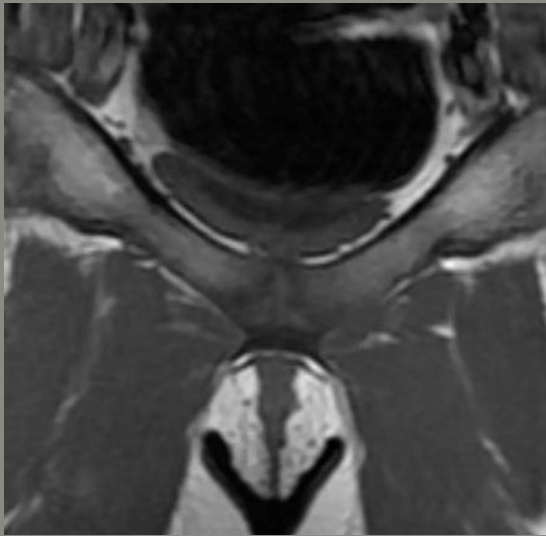
Pubic Osteo-artropathy



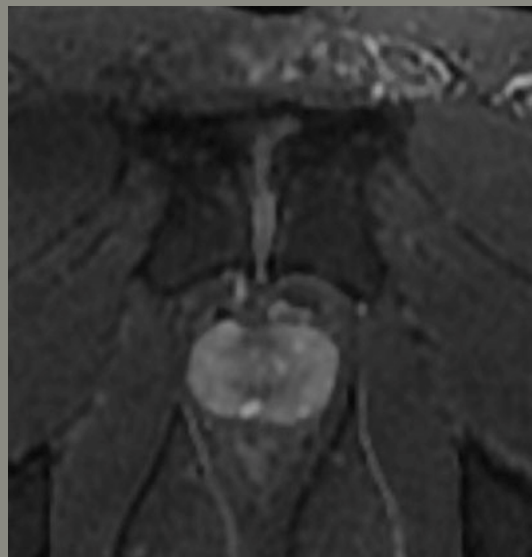
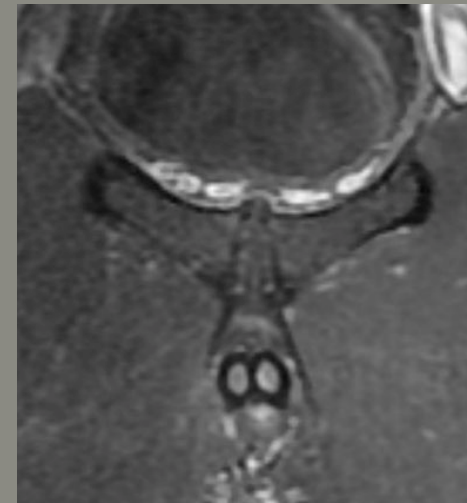
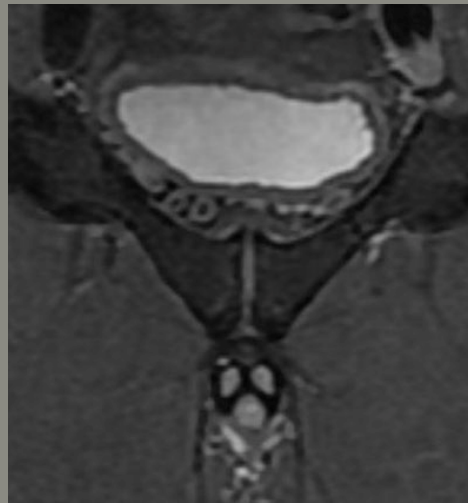
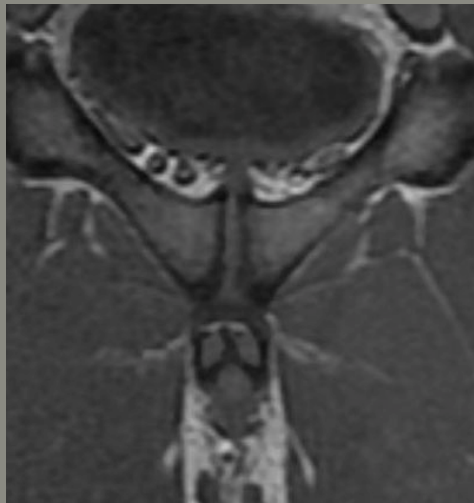
Pubic Osteo-artropathy



Pubic Osteo-artropathy

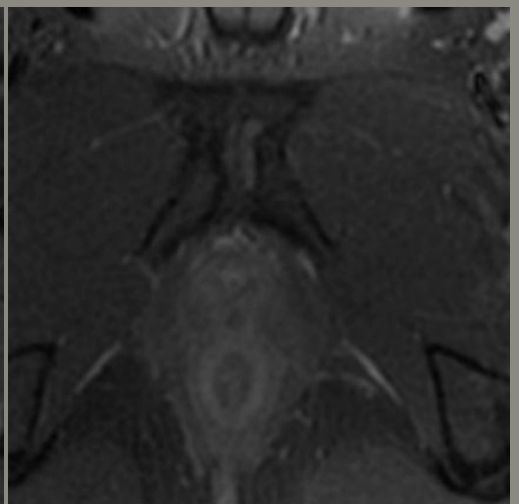
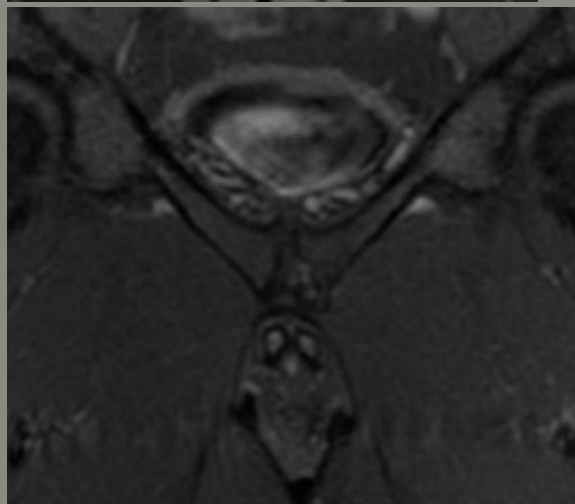
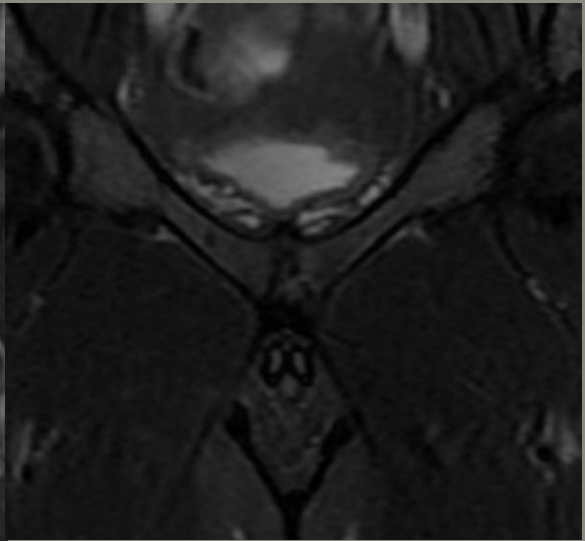
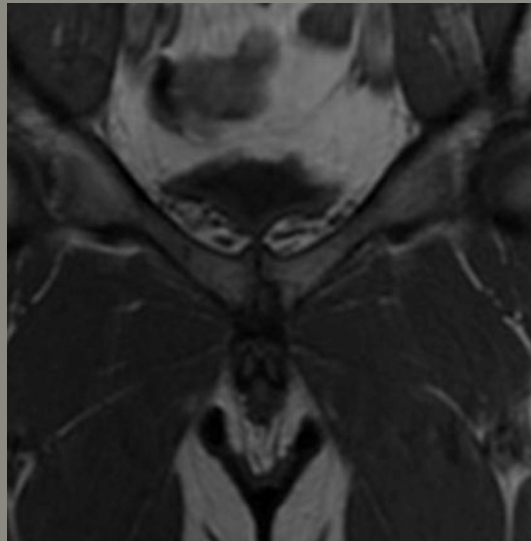


Pubic Osteo-artropathy



secondary cleft sign

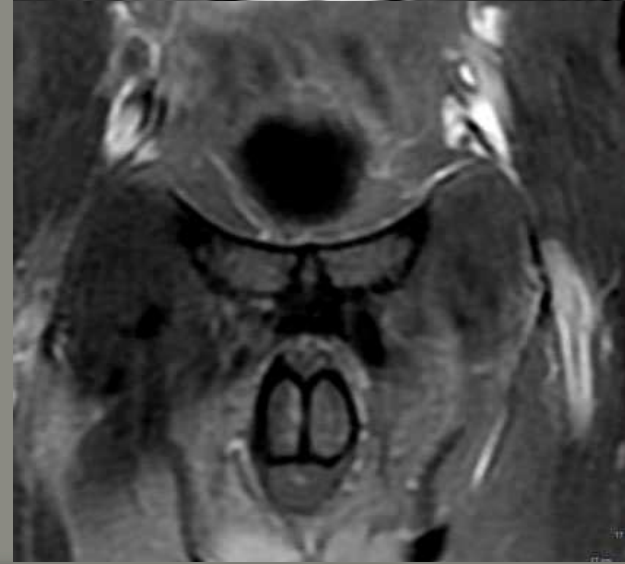
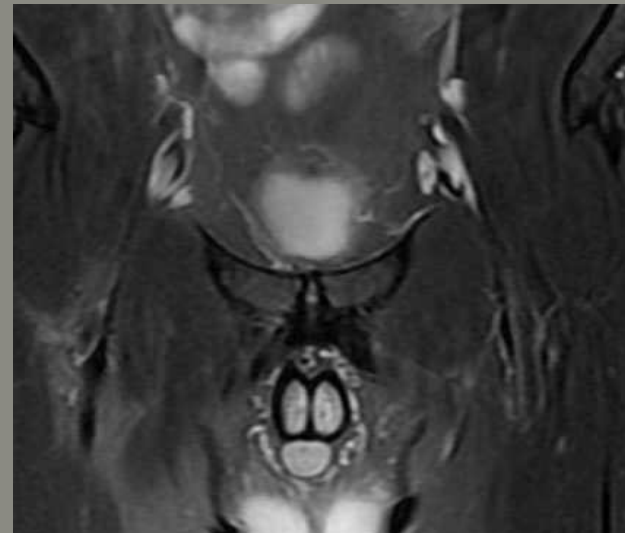
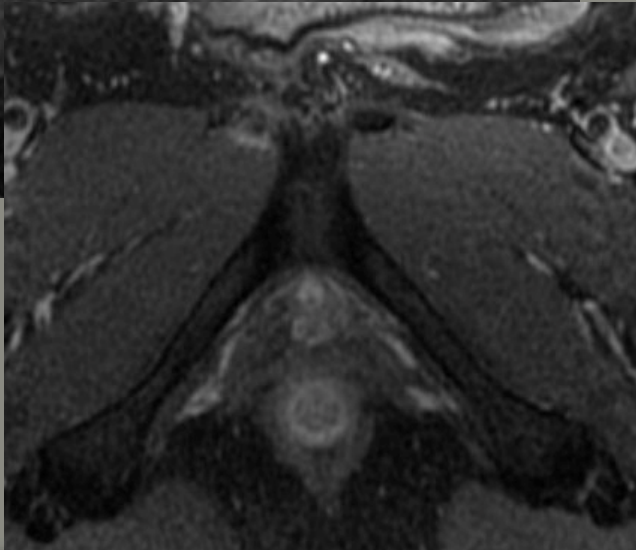
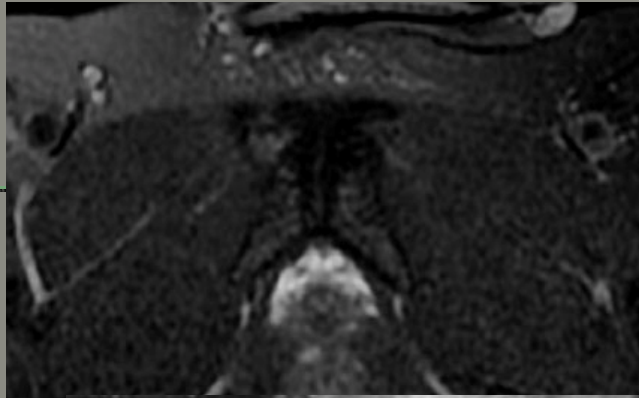
Pubic Osteo-artropathy



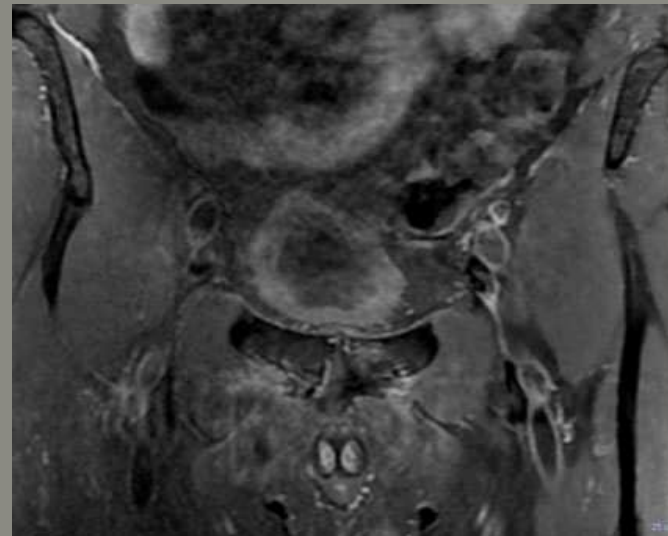
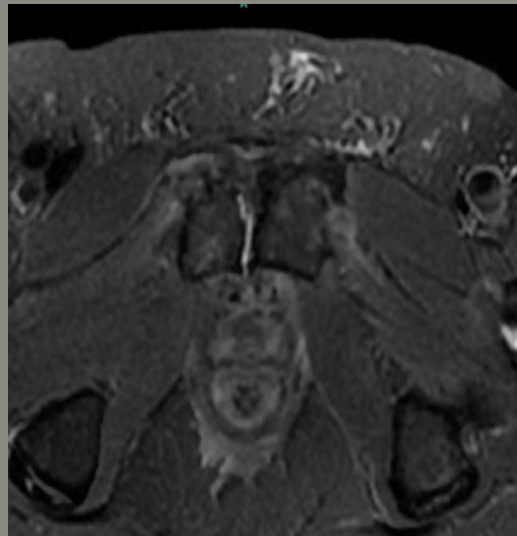
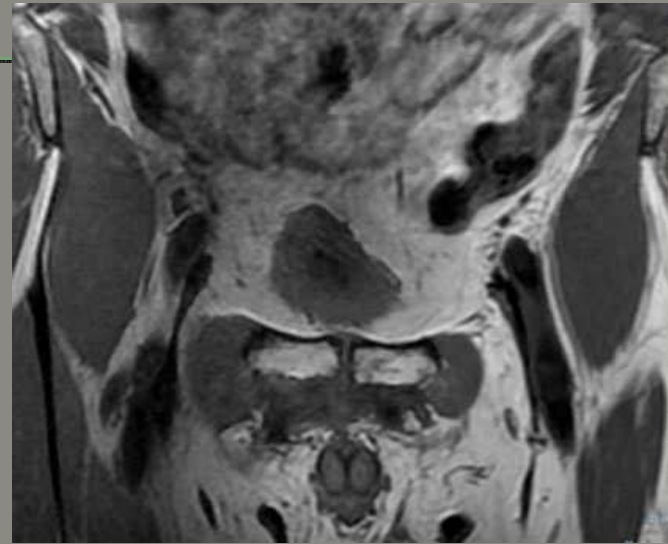
Tendinopathy

- Adductor longus+++
- Rectus abdominis (uncommon)
- Enthesopathy and Tendinopathy, muscle changes
- Thickening, inflammatory features and microtears of the tendon
- Neovascularisation uncommon
- Acute avulsion
- US, MRI ++

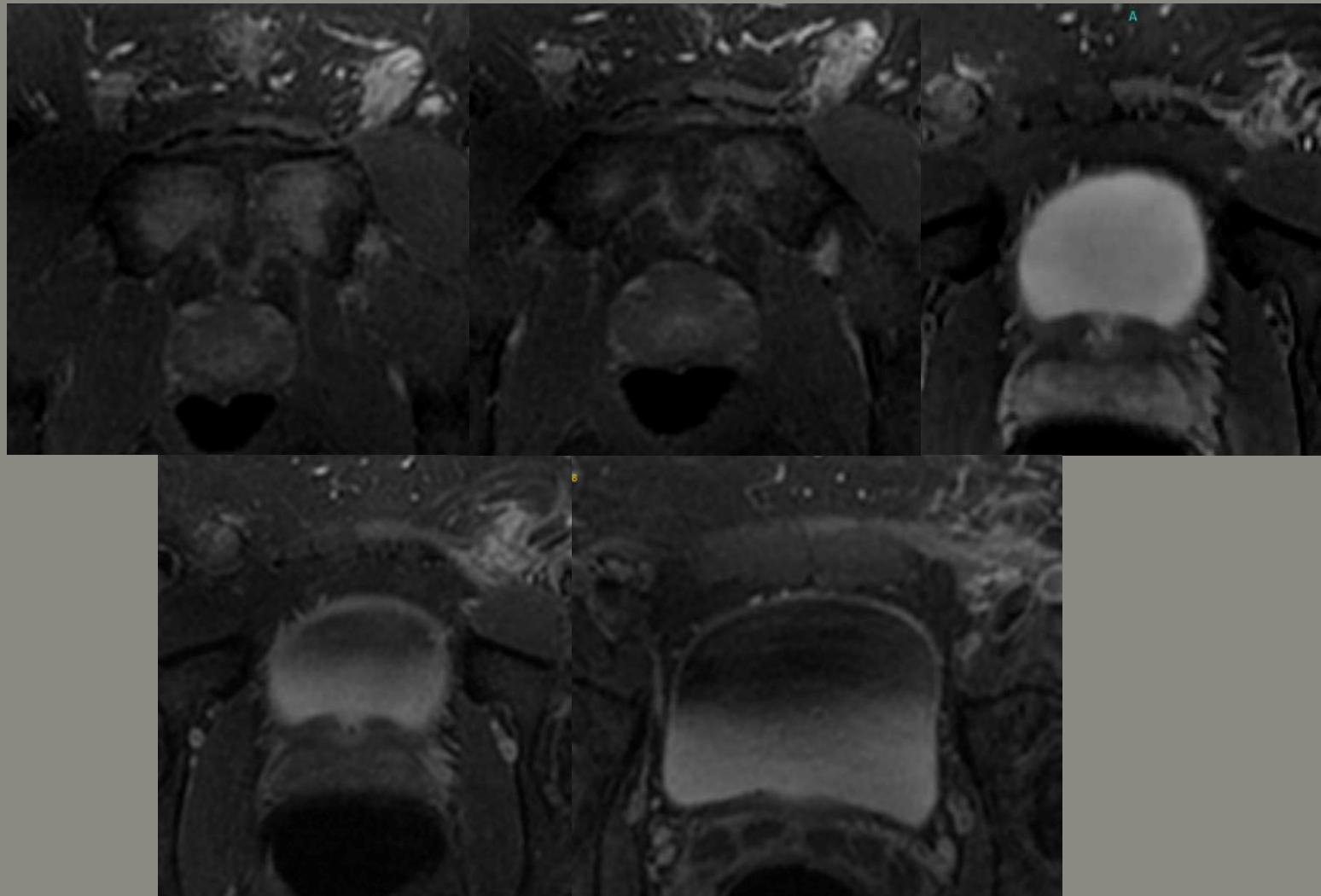
Tendinopathy



Tendinopathy



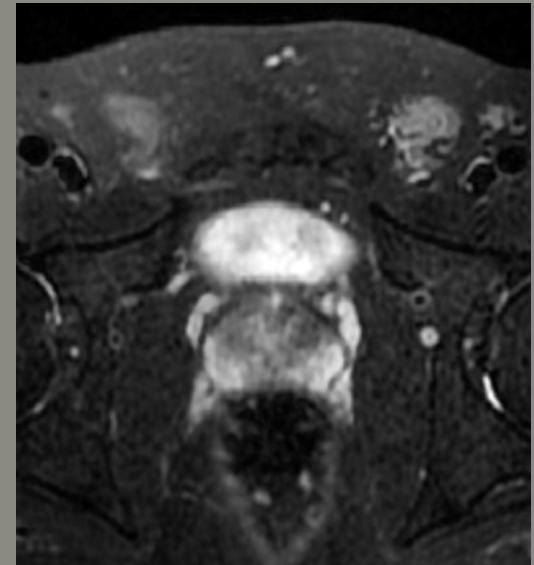
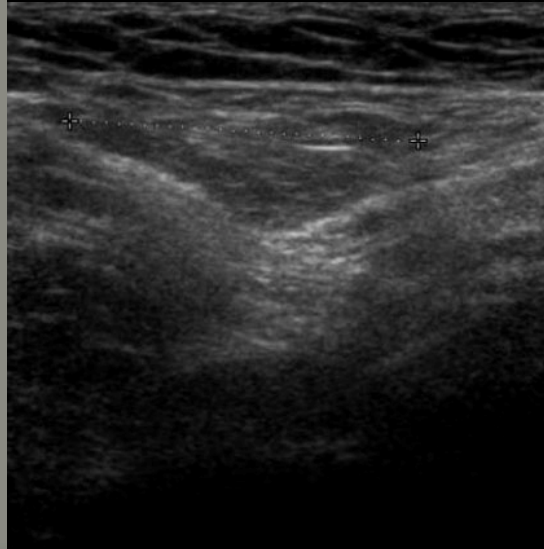
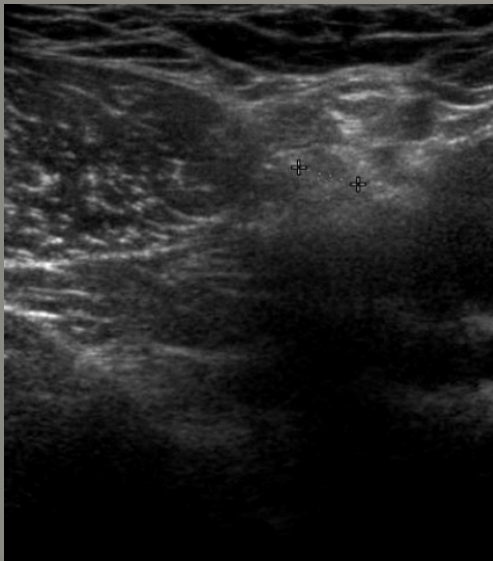
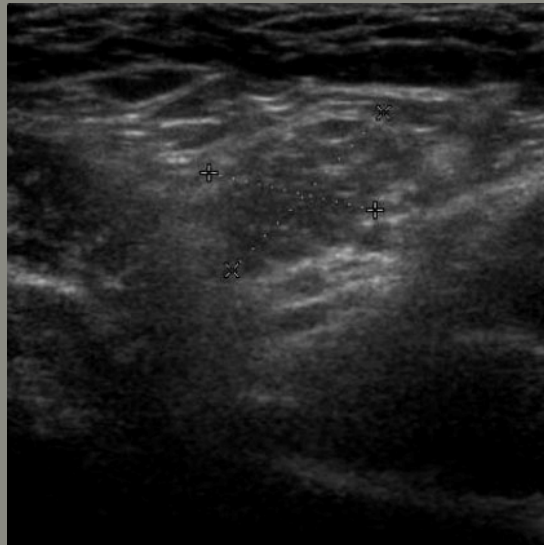
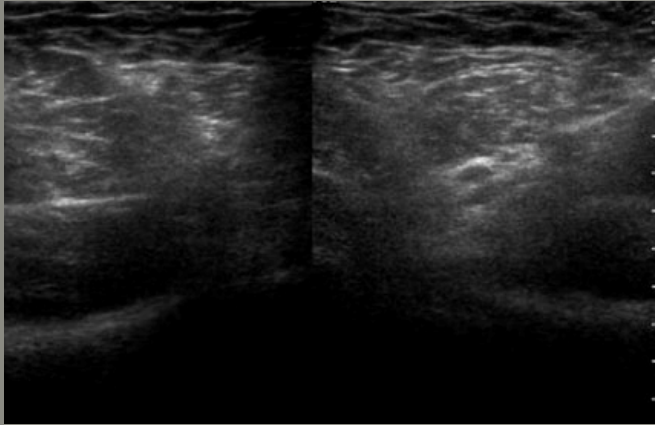
Tendinopathy



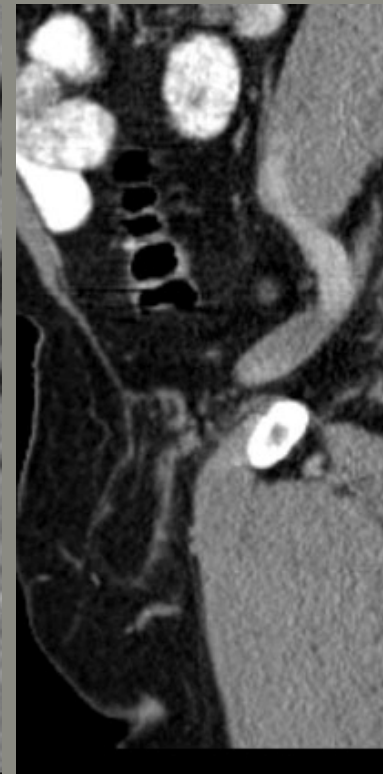
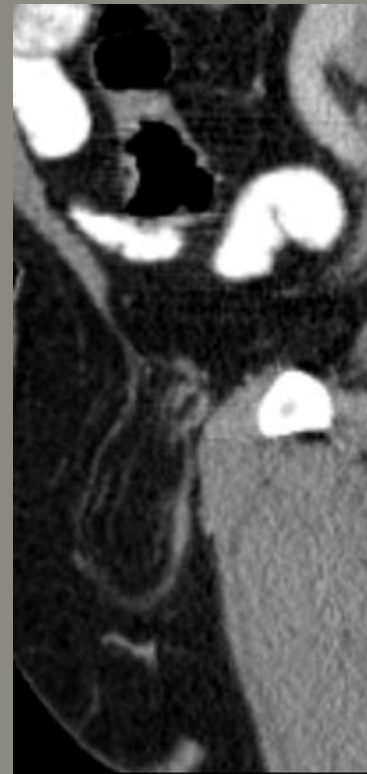
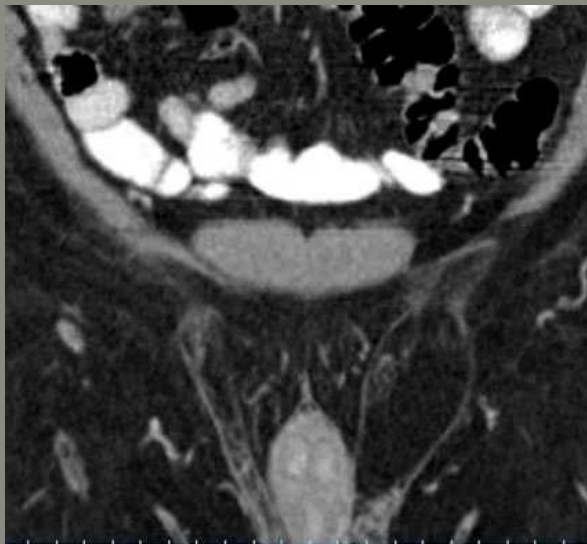
Sportsman's Hernia

- Enlargement of the superficial inguinal ring is common by athletes
- Changes of inguinal ligament/conjoint tendon are subtle even with US (inflammatory tissue, scar tissue)
- Hernias : common by athletes, without complication usually (reducible, fat tissue)
- Inguinal (direct)++ or crural
- Comparative assessment
- Dynamic evaluation (Valsalva, standing) +++
- Size, pubic distance, neck, hypervascularisation uncommon
- US+++ , CT, IRM

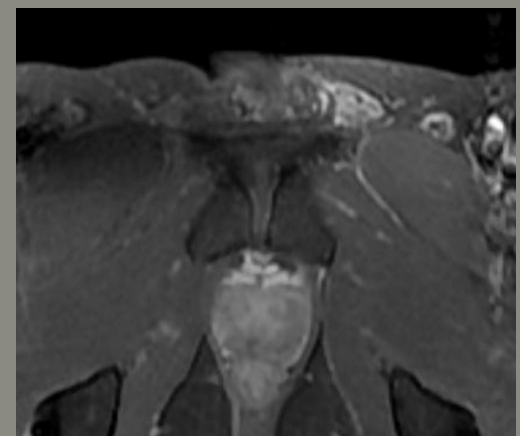
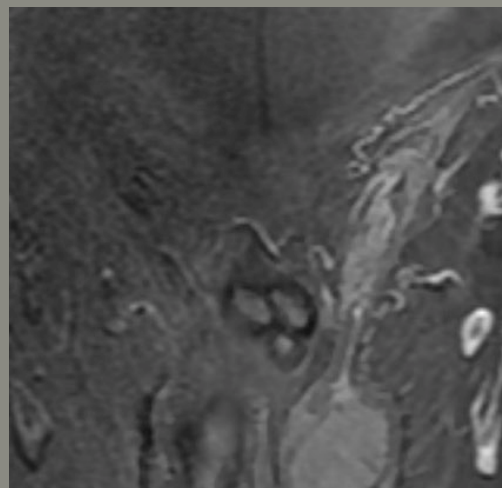
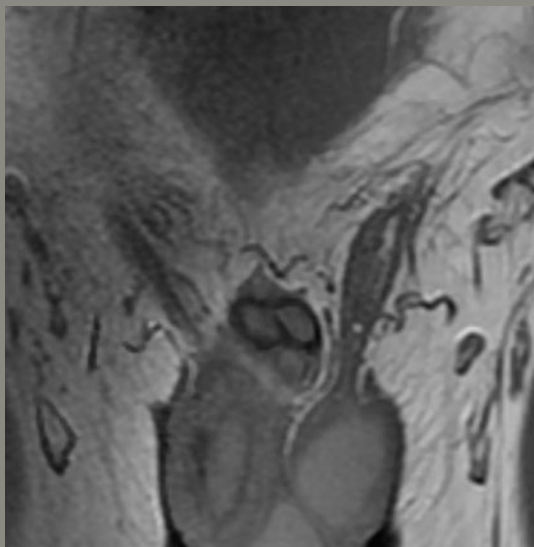
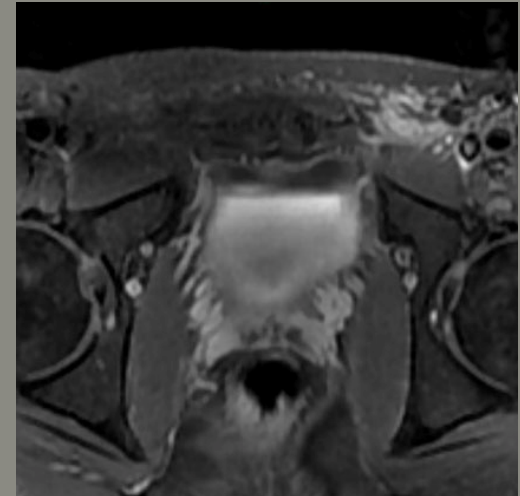
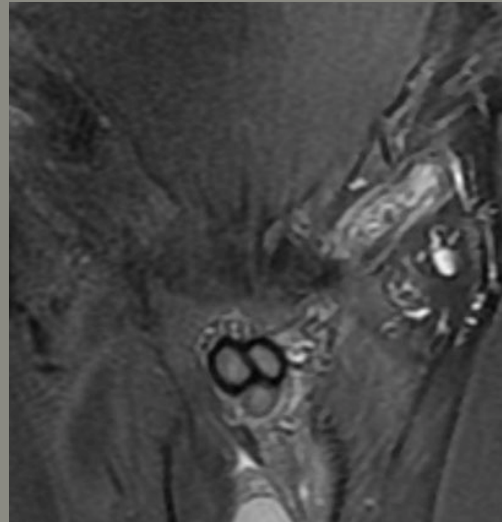
Sportsman's Hernia



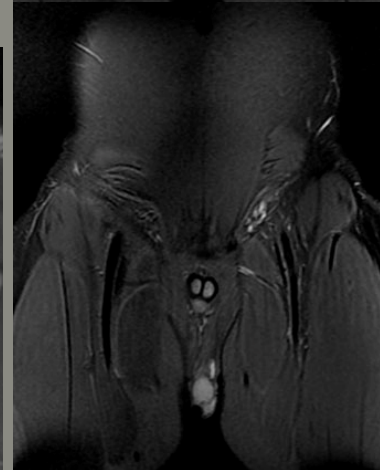
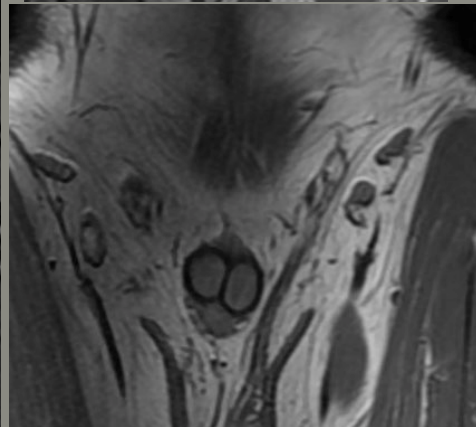
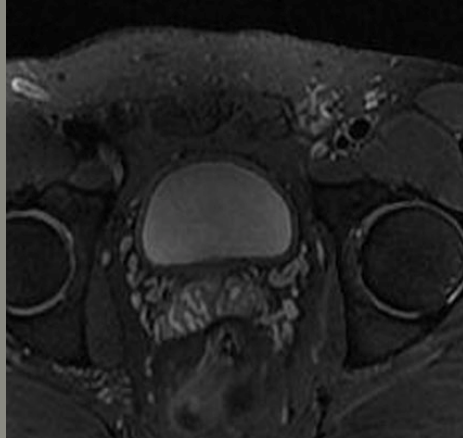
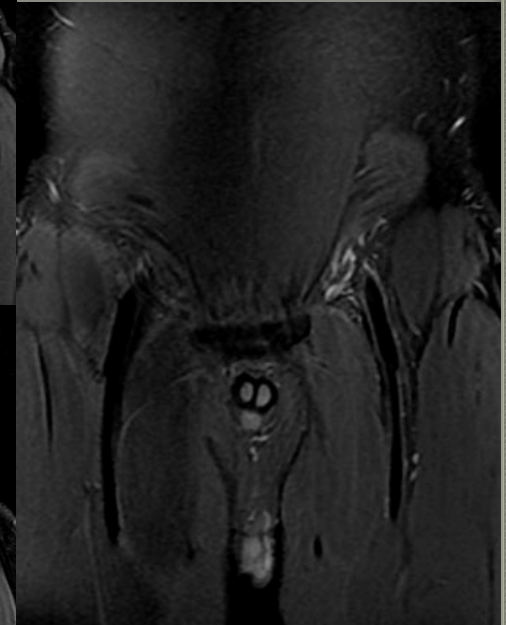
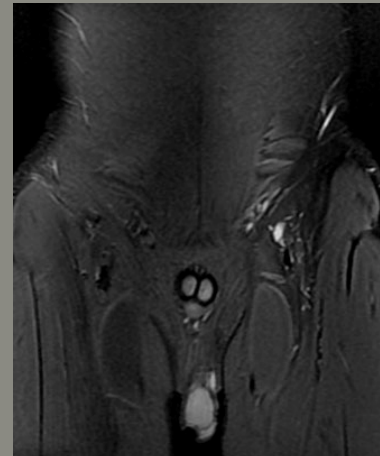
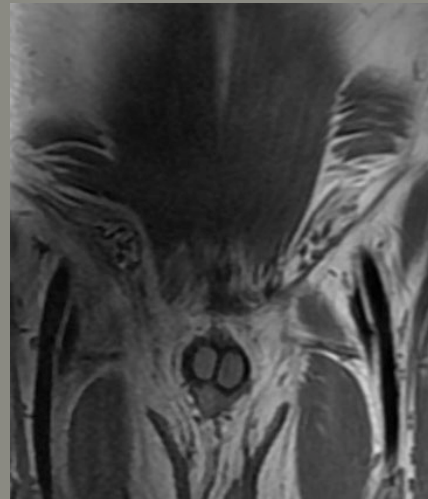
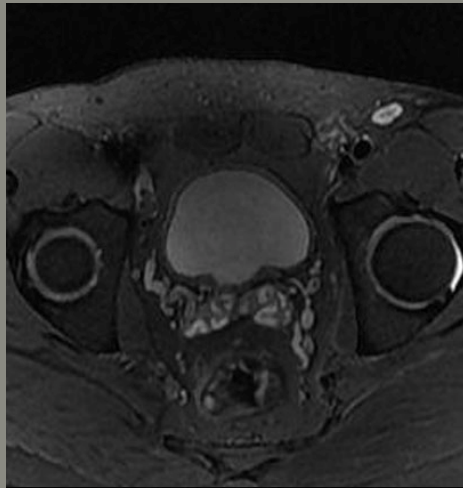
Sportsman's Hernia



Sportsman's Hernia



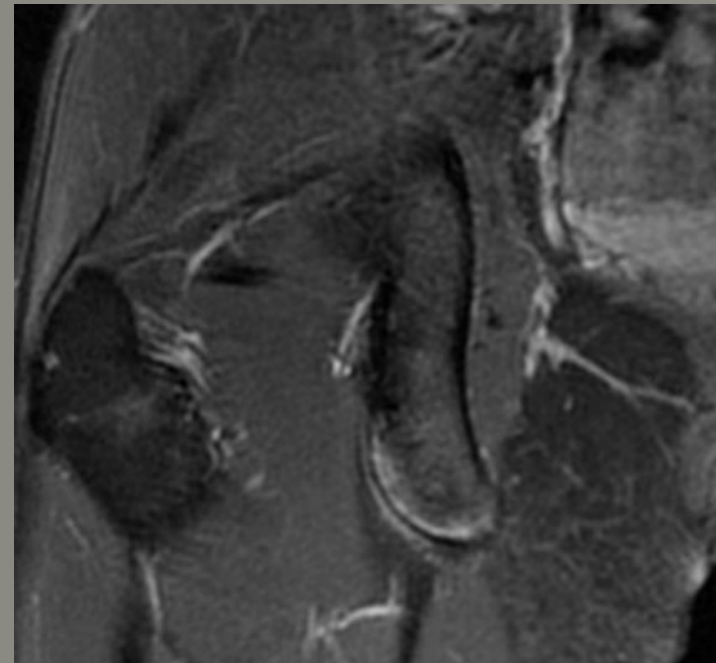
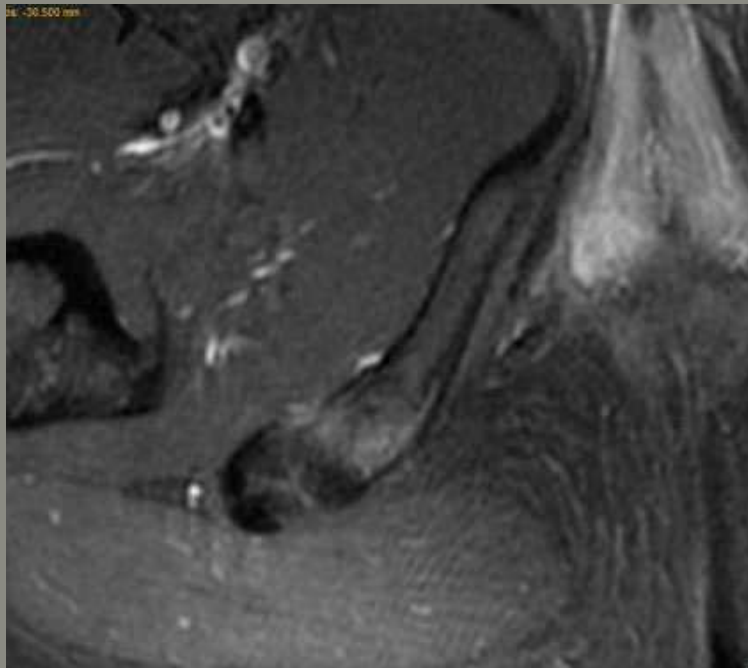
Sportsman's Hernia



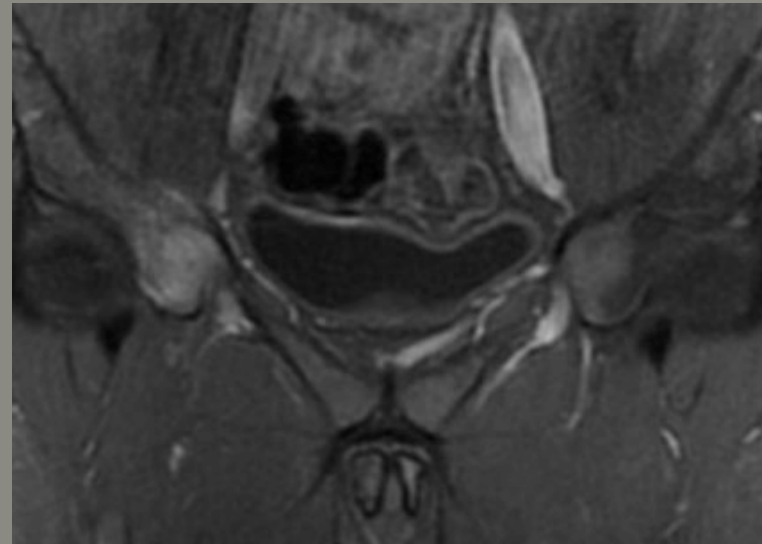
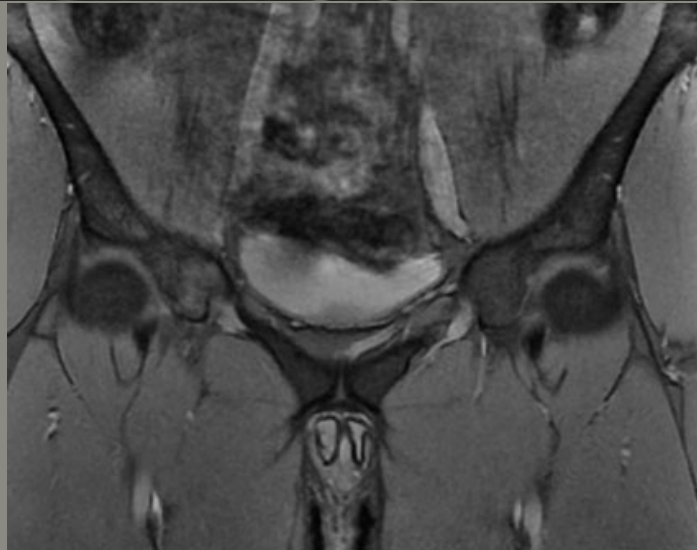
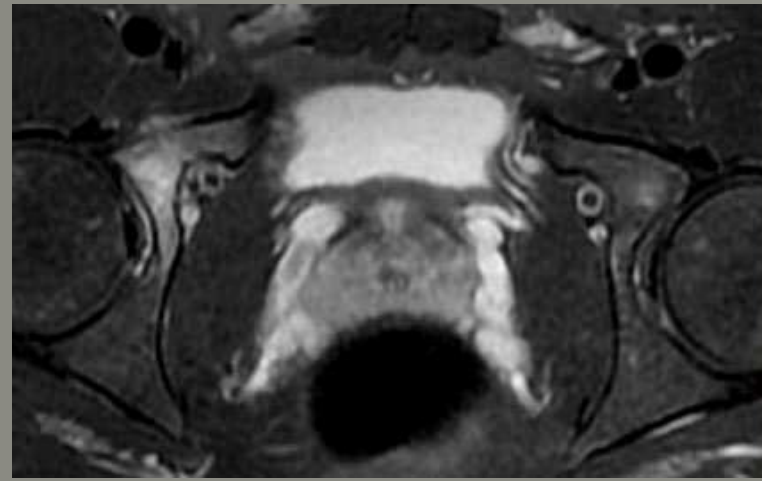
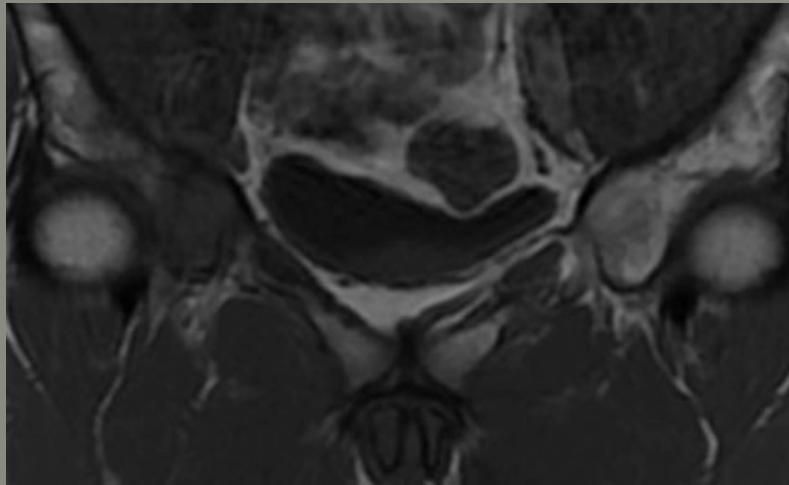
Other causes

- Stress fracture of the ilio-ischio-pubic bone :
MRI+++,
- Ilio-psoas disfunction, rectus femoris injury
- Hockey Goalie-Base-ball Pitcher Syndrome
- Nerve entrapment : ilio-inguinal, obturator
- (Hip joint, SIJ, lumbar spine)
- Septic arthritis
- Tumors (oo), infection, spondylarthropathy
sero(-)

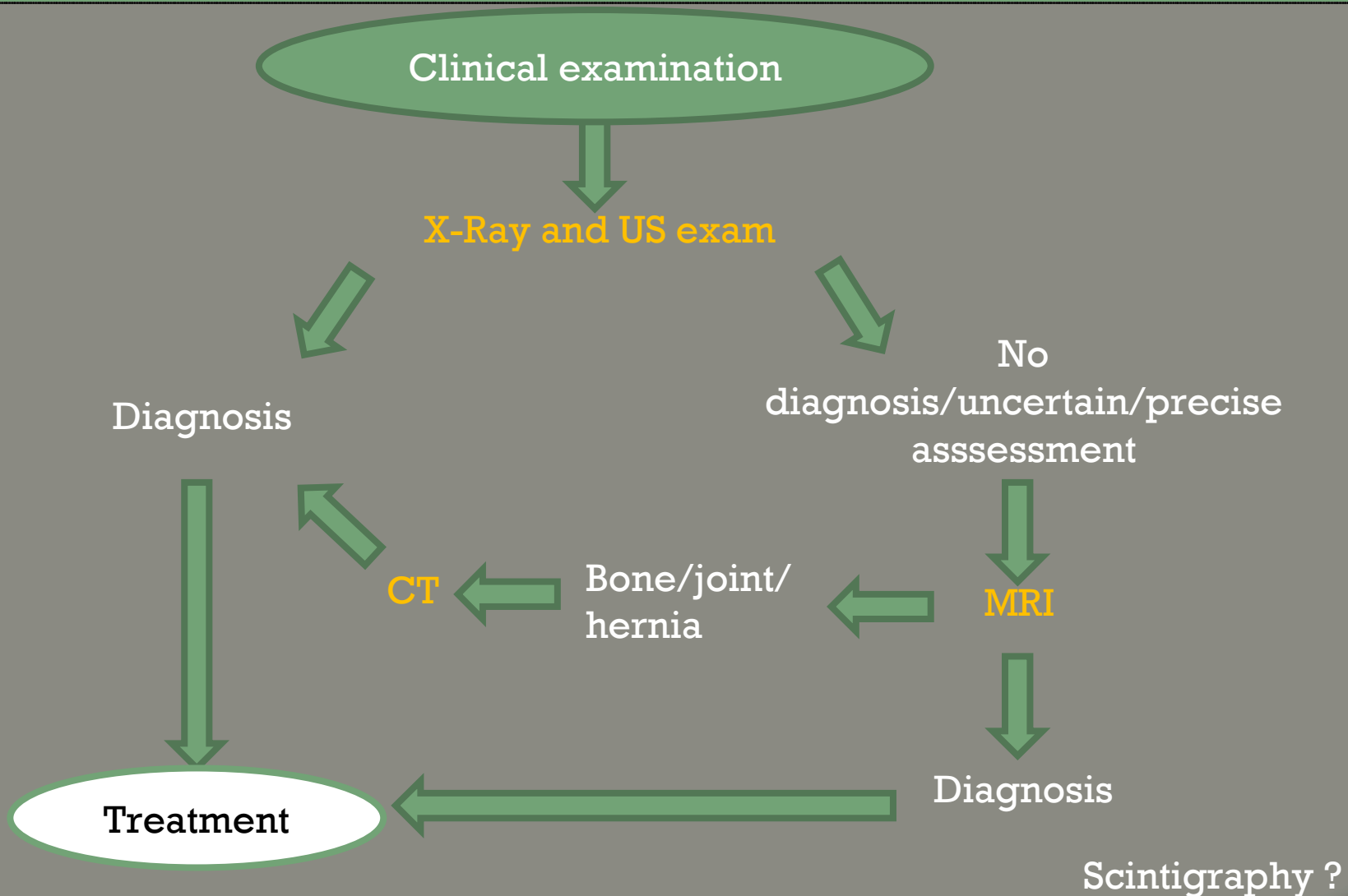
Other causes



Other causes



Imaging Strategy



Conclusion

- Common symptom in sport Medicine
- Clinical diagnosis may be difficult
- Imaging techniques are useful
- Good knowledge of Anatomy, Physiopathology, sport injury mechanisms
- Good experience (US, MRI)
- Multidisciplinary approach



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