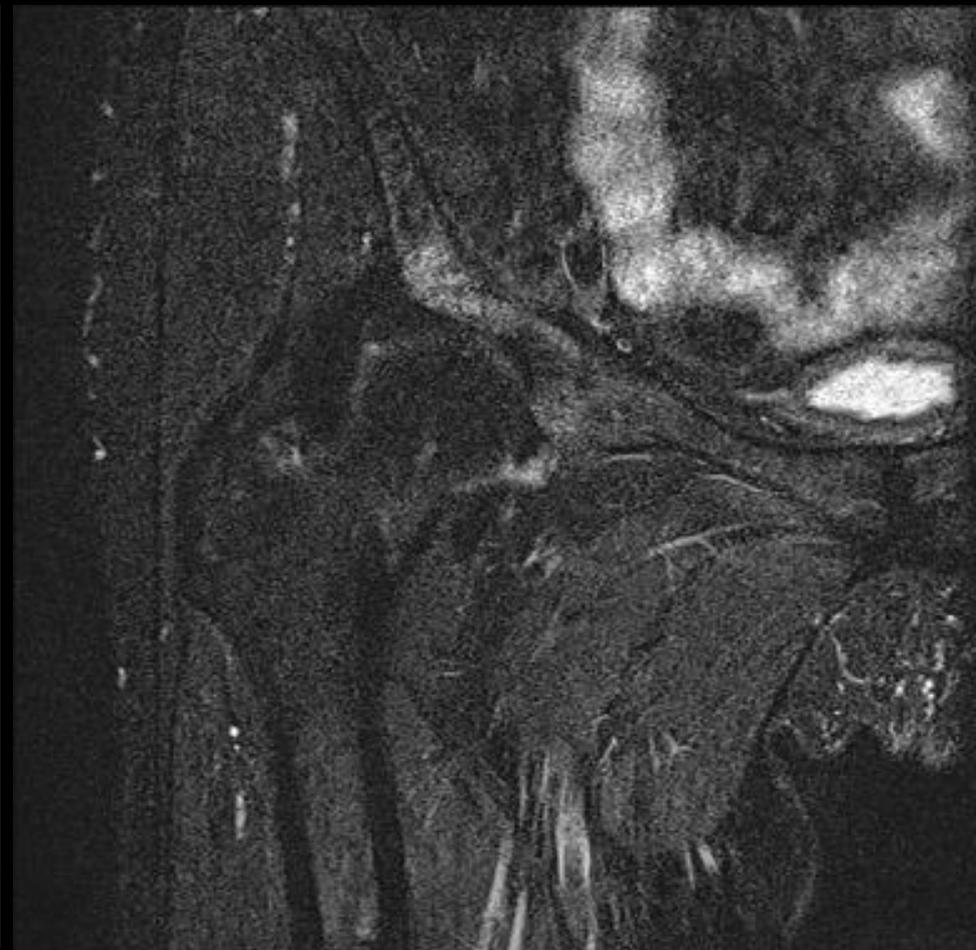
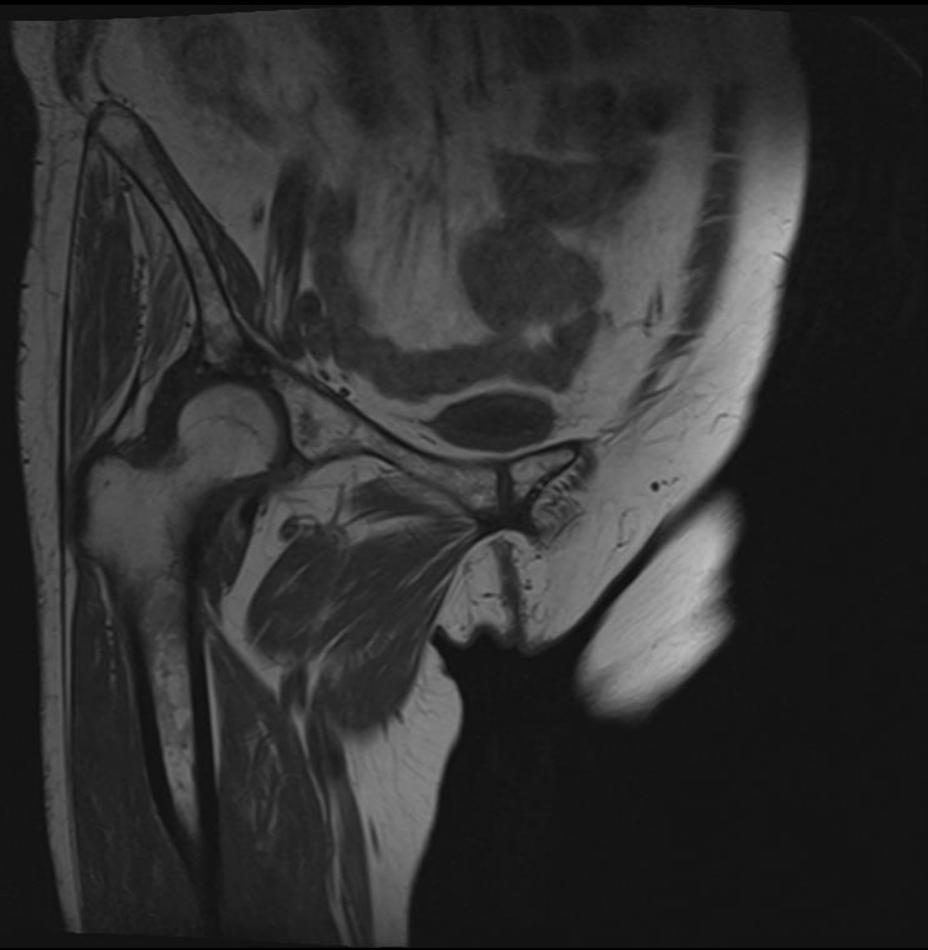
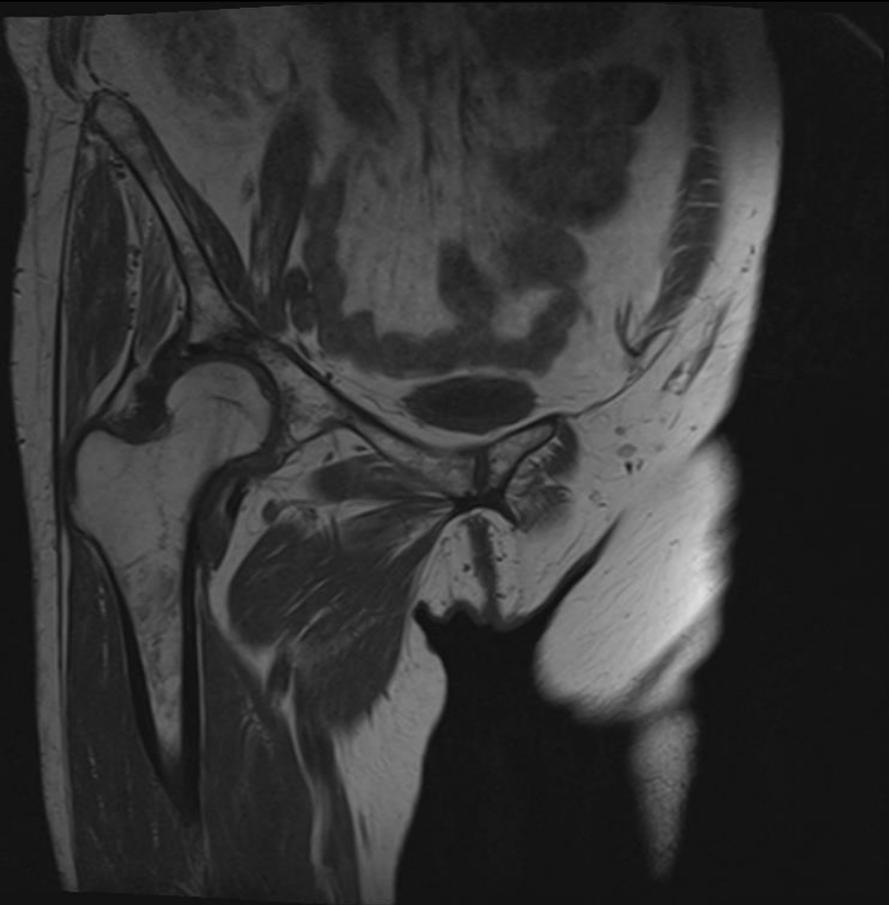
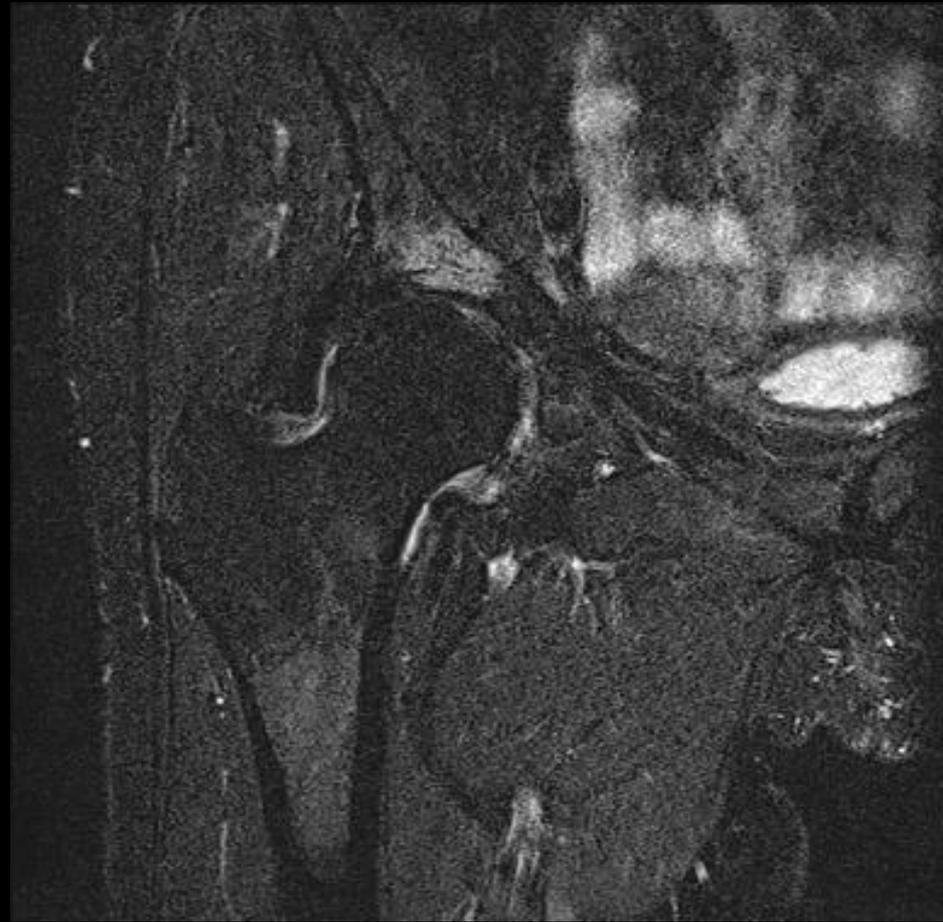
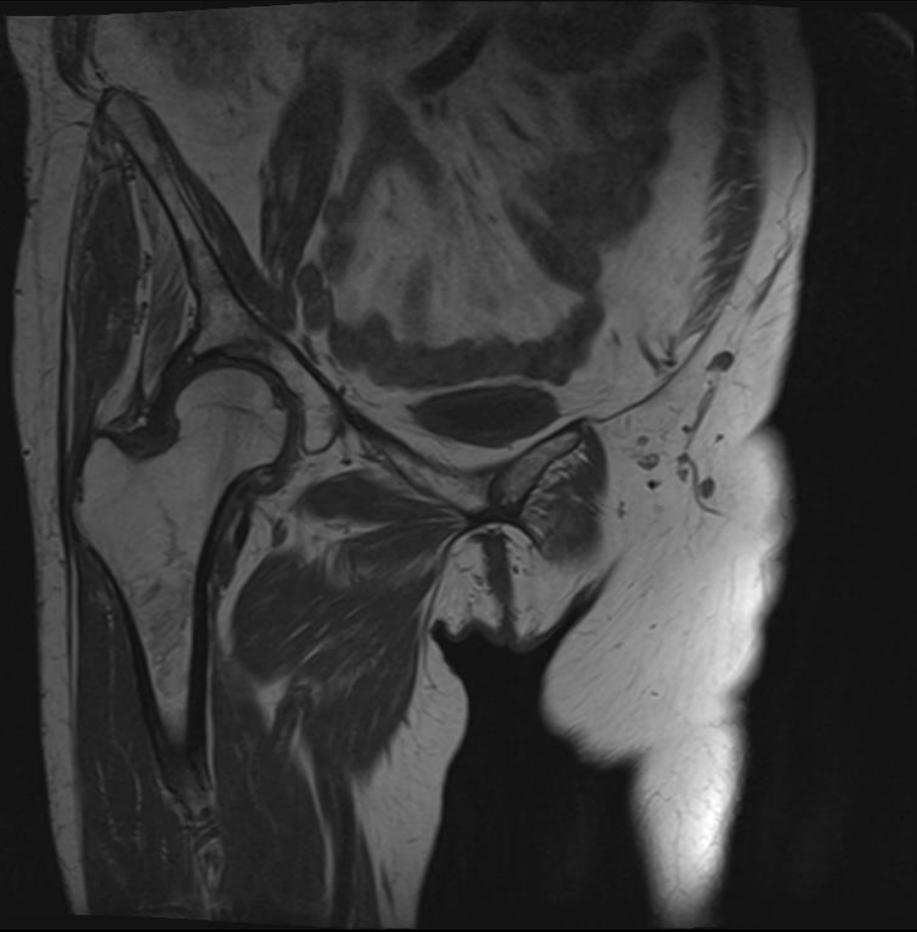


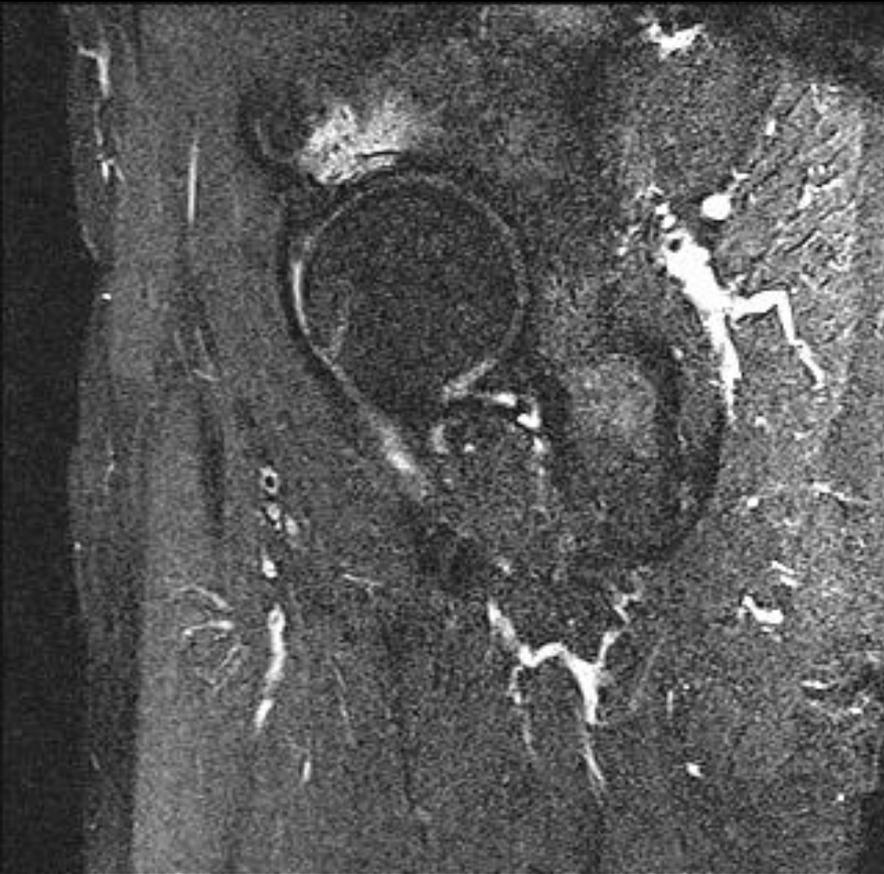
Hip pain, history of breast cancer

Ben Rokach









Para-acetabular insufficiency fracture

Magnetic resonance imaging of para-acetabular insufficiency fractures in patients with malignancy[☆]

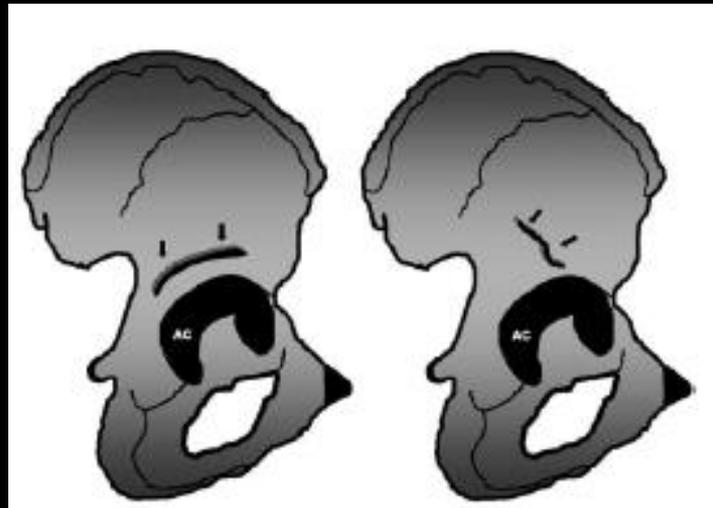
S.J. Theodorou^{a,b,c}, D.J. Theodorou^{a,b,*}, M.E. Schweitzer^d,
Y. Kakitsubata^{a,b}, D. Resnick^{a,b}

- Insufficiency fractures are well described in sacrum, ilium and pubic bones
- Para-acetabular insufficiency fractures are uncommon
- Can be a cause of severe hip or pelvic pain and may simulate metastatic disease/local recurrence
- Diagnosis difficult – may be radiographically occult

- Reviewed medical records of patients with progressive, debilitating hip or pelvic pain who had MRI over a 7 year period (excluded pts with hx of trauma to hip/pelvis)
 - Revealed 16 patients with dx of para-acetabular insufficiency fracture
 - All patients were known to have cancer
 - Ovarian, n=3
 - Uterine, n=3
 - Breast, n=3
 - Prostate, n=2
 - Bladder, n=2
 - Rectal, n=1
 - Lung, n=1
 - Multiple myeloma, n=1

- All patients presented with gradual onset of severe, incapacitating hip or pelvic pain that was aggravated by weight bearing
- 11 of 16 patients had clinical dx of metastatic disease/recurrent tumor
- In addition to MR, all patients had received radiographs

- Fracture diagnosis
 - Discrete fracture line with low signal on T1 and/or T2
 - Classified as curvilinear or oblique



Theodorou SJ, Theodorou DJ, Schweitzer ME, Kakitsubata Y, Resnick D. Magnetic resonance imaging of para-acetabular insufficiency fractures in patients with malignancy. Clin Rad 2006;61:181-90

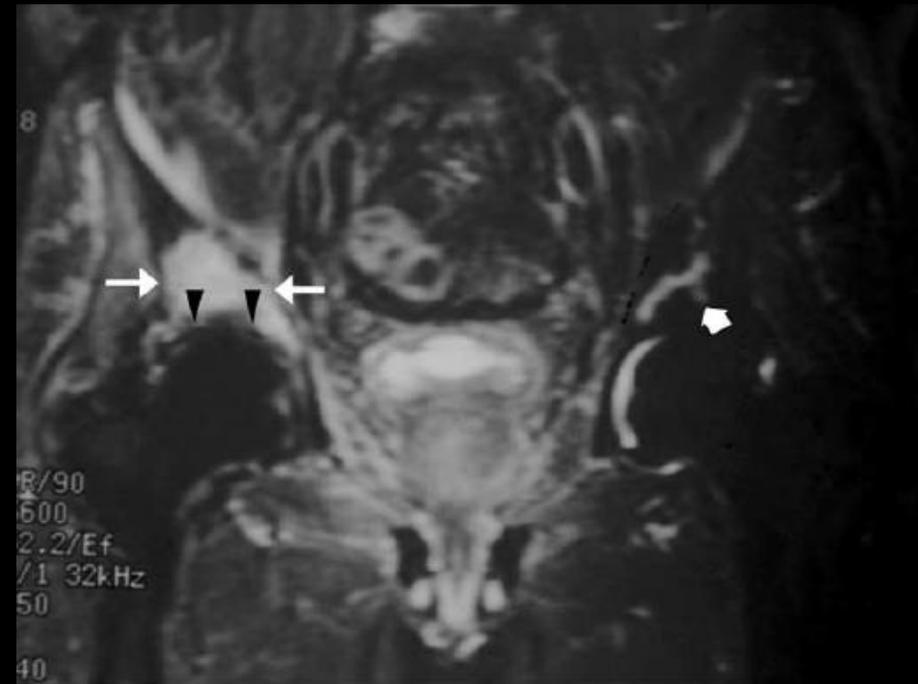
Results

- Radiographs of limited value
 - 10 patients (63%) revealed subtle band-like or patchy subchondral sclerosis consistent with fracture (14 total)
 - 5 patients (31%) no abnormality
 - 1 patient (6%) equivocal



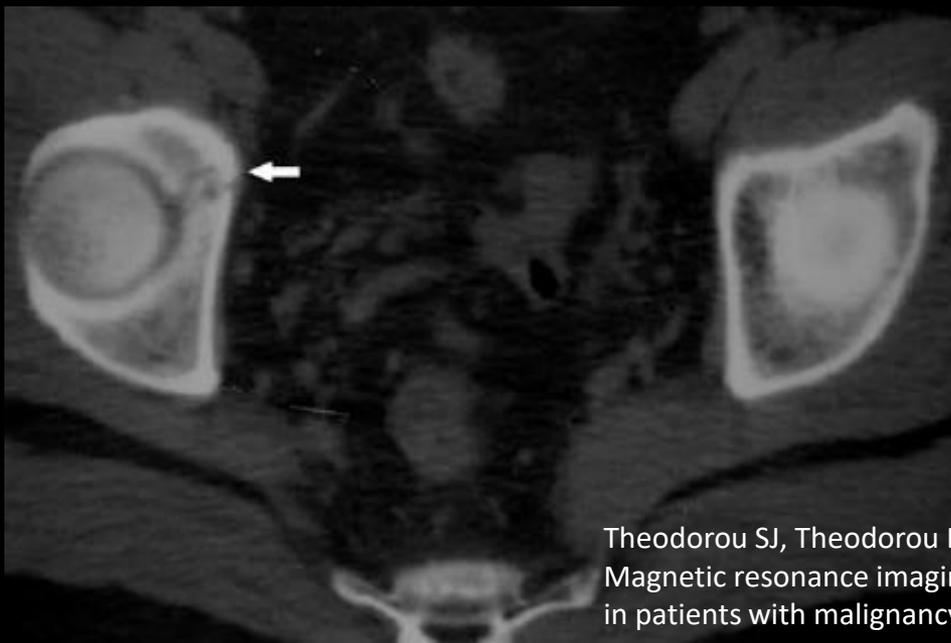
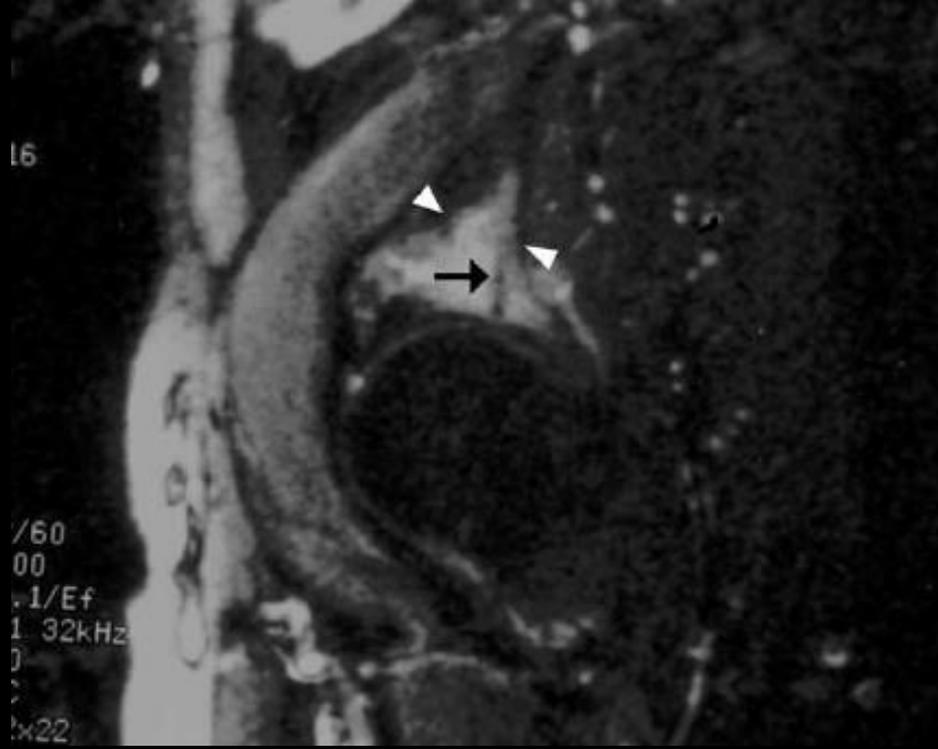
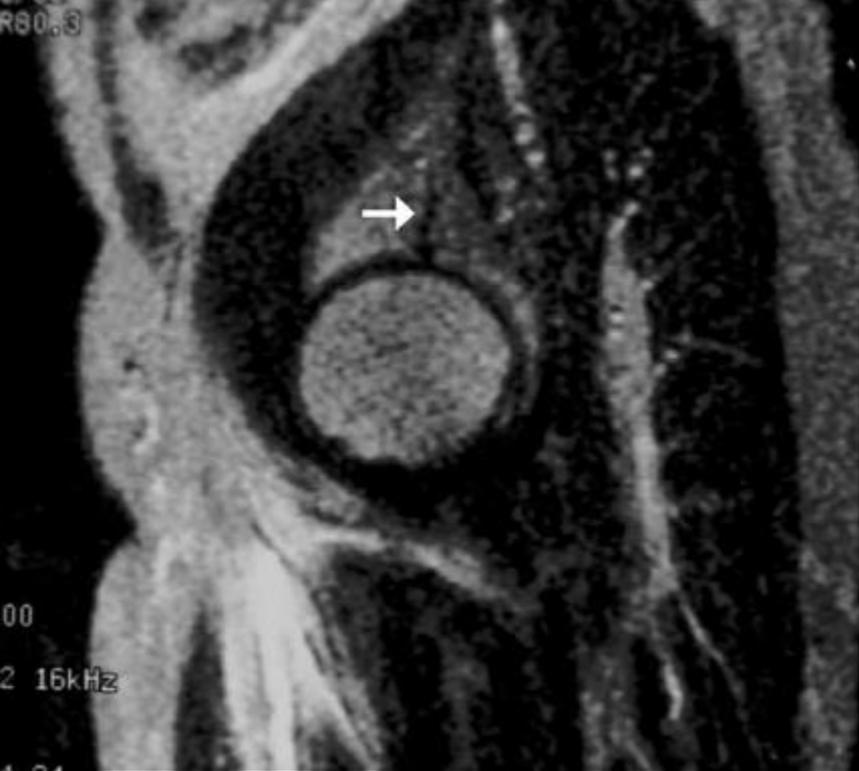
- MRI

- 21 para-acetabular insufficiency fractures
- Decreased signal on T1 and increased T2 in the area above the acetabular roof = edema
- All fracture lines had faint margins and low signal on T1 and T2
- Curvilinear in 18 (86%)
- Straight and crossed acetabular roof obliquely in 3 (14%)
- 4 fractures demonstrated marked enhancement of adjacent bone after contrast indicating increased vascularity or inflammation or both
- None associated with soft tissue mass



Theodorou SJ, Theodorou DJ, Schweitzer ME, Kakitsubata Y, Resnick D. Magnetic resonance imaging of para-acetabular insufficiency fractures in patients with malignancy. Clin Rad 2006;61:181-90

- 4 received CT – clear visualization of fracture line
- Surgical correlation in 2 patients revealed no tumor
- 2 patients had associated sacral fractures



Theodorou SJ, Theodorou DJ, Shweitzer ME, Kakitsubata Y, Resnick D. Magnetic resonance imaging of para-acetabulr insufficiency fractures in patients with malignancy. Clin Rad 2006;61-181-90

- Largest series of patients with para-acetabular insufficiency fractures
- Insufficiency fractures occur when normal stress is applied on deficient bone
- Pelvic radiotherapy and osteoporosis result in bone atrophy and demineralization and are the dominant predisposing factors
 - Postmenopausal women with pelvic irradiation for gynecological malignancy are at very high risk
- Additional factors:
 - Advanced age
 - Steroid therapy
 - RA
 - Arthroplasty
 - Vitamin D deficiency
 - Fluoride treatment

? Pathogenesis

- In pelvis, weight bearing results in transmission of most of mechanical load to acetabula
- Presumed that patients with weakened pelvic bones impose increased mechanic loads across the ilium which may lead to unilateral mechanic failure of pelvic girdle with development of insufficiency fractures

- All patients in study had known malignancy
- Study suggests that primary malignant neoplasms with a potential to metastasize to the pelvic bones may play a critical role in development of para-acetabular insufficiency fractures

Skeletal Radiol (1997) 26:279–283

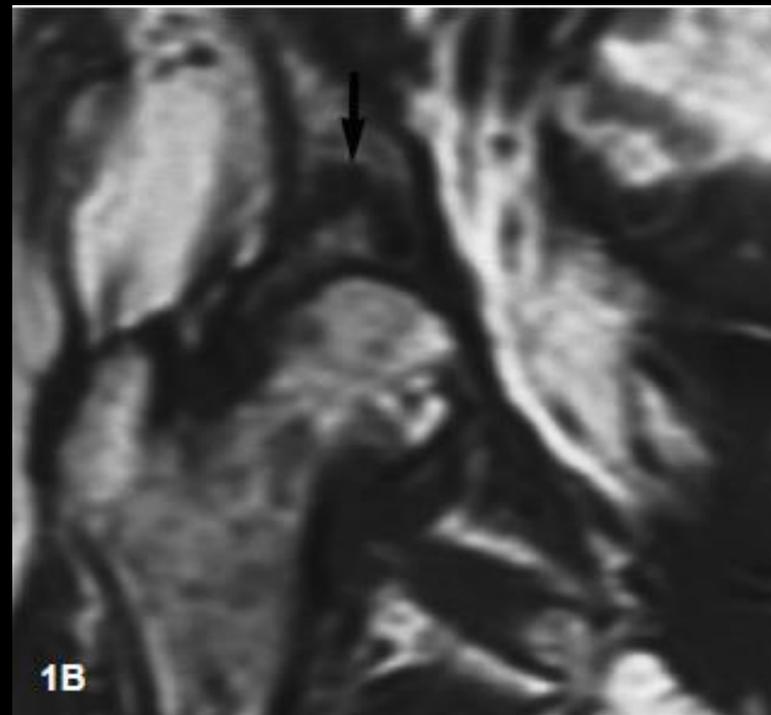
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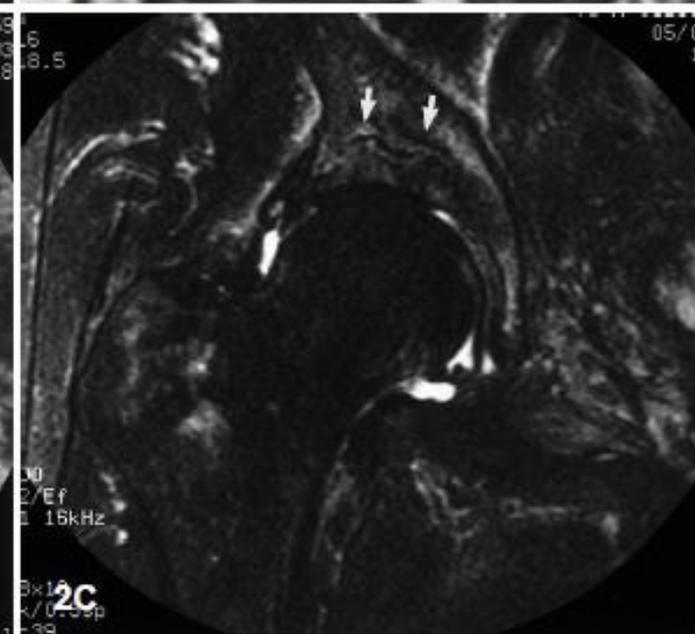
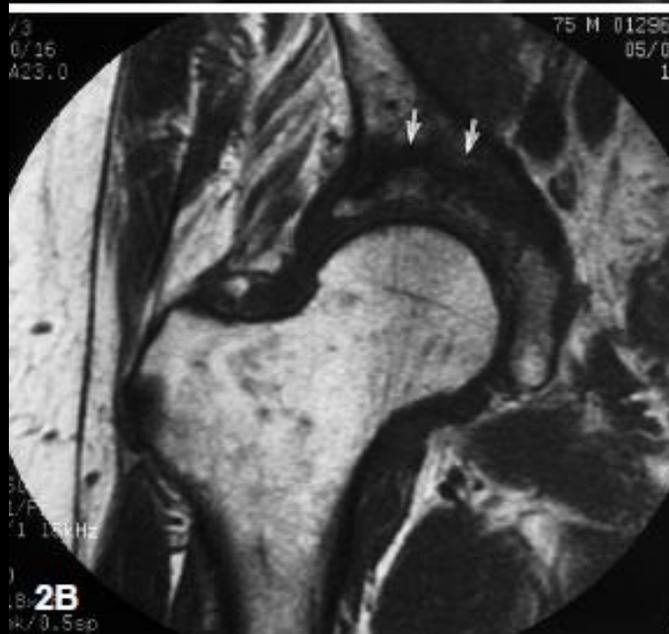
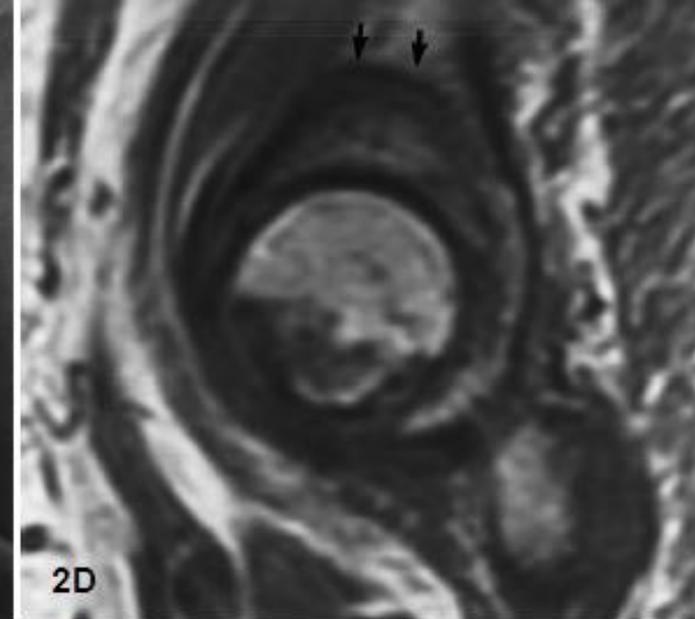
Michael T. Otte
Clyde A. Helms
Russell C. Fritz

MR imaging of supra-acetabular insufficiency fractures

- 12 patients at risk for pelvic insufficiency fractures and had pelvic/hip pain were studied with MR
- 8 had a history of malignancy
- Curvilinear fracture seen in 11 (92%)
- Oblique fracture in 1 (8%)
- 8 patients had no abnormality on x ray
 - 3 showed sclerosis, 1 faint radiolucency



Otte MT, Helms CA, Fritz RC. MR imaging of supra-acetabular insufficiency fractures. *Skeletal Radiol* 1997;26:279—83.



Otte MT, Helms CA, Fritz RC. MR imaging of supra-acetabular insufficiency fractures. *Skeletal Radiol* 1997;26:279—83.

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