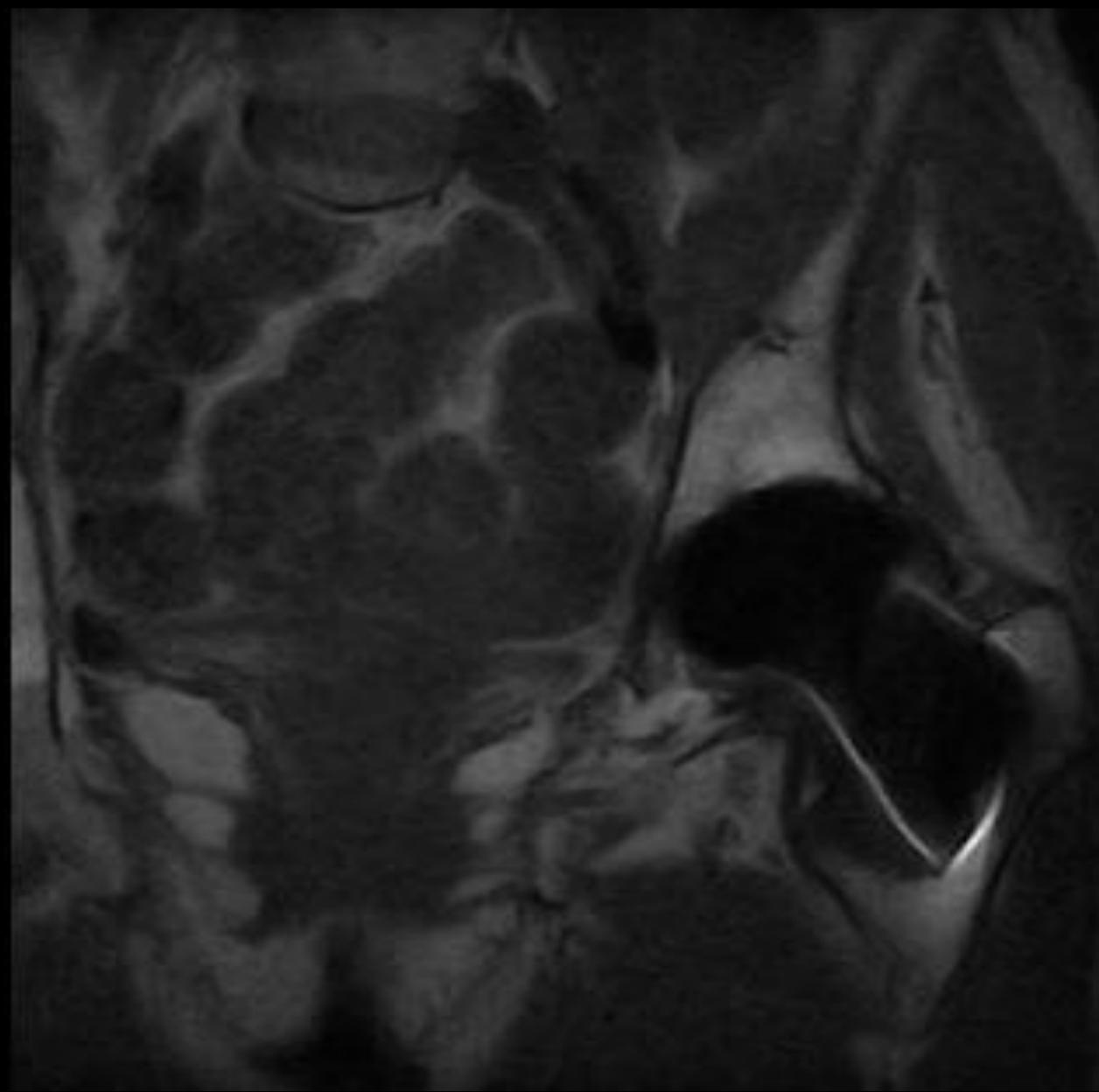
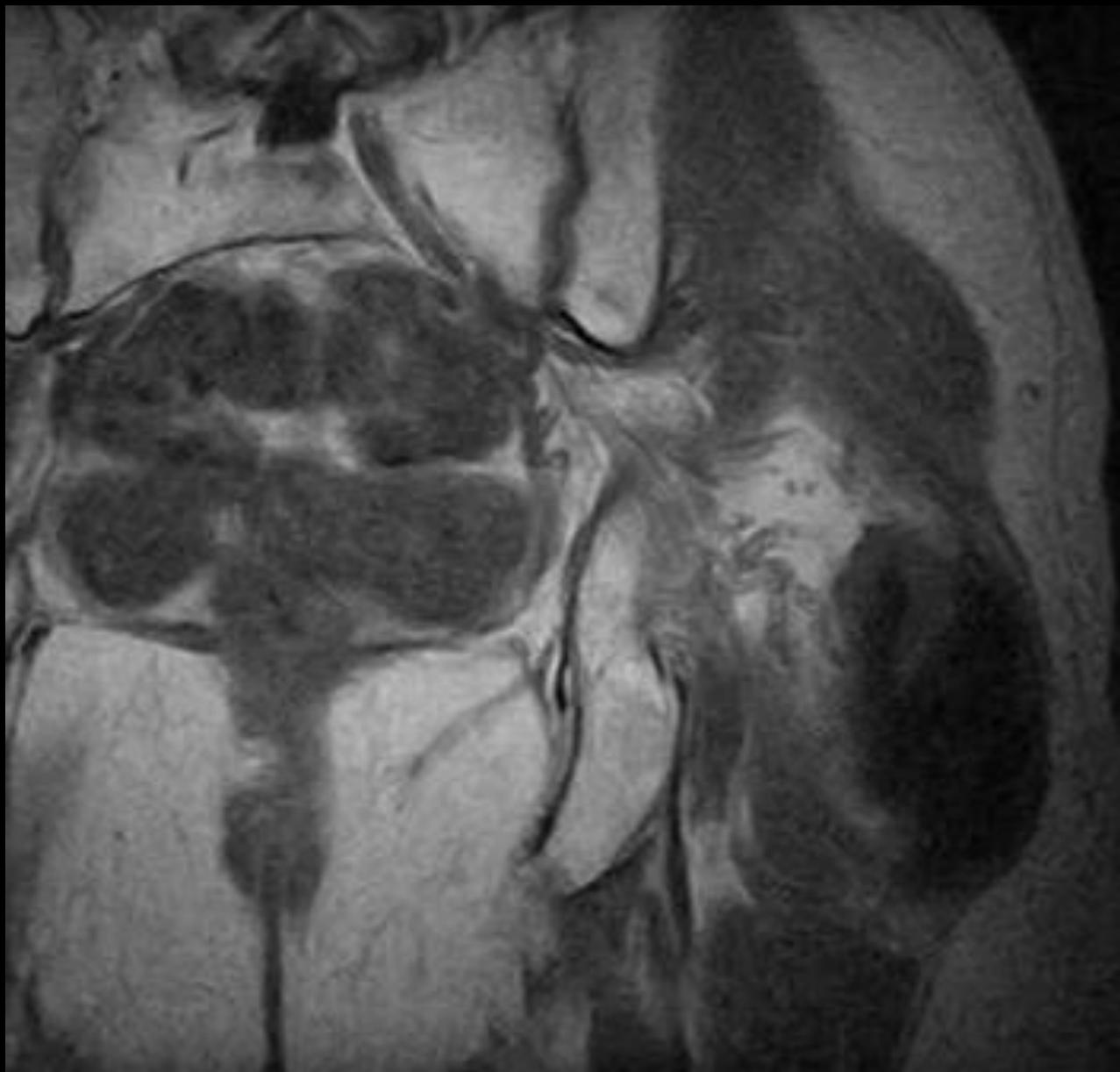


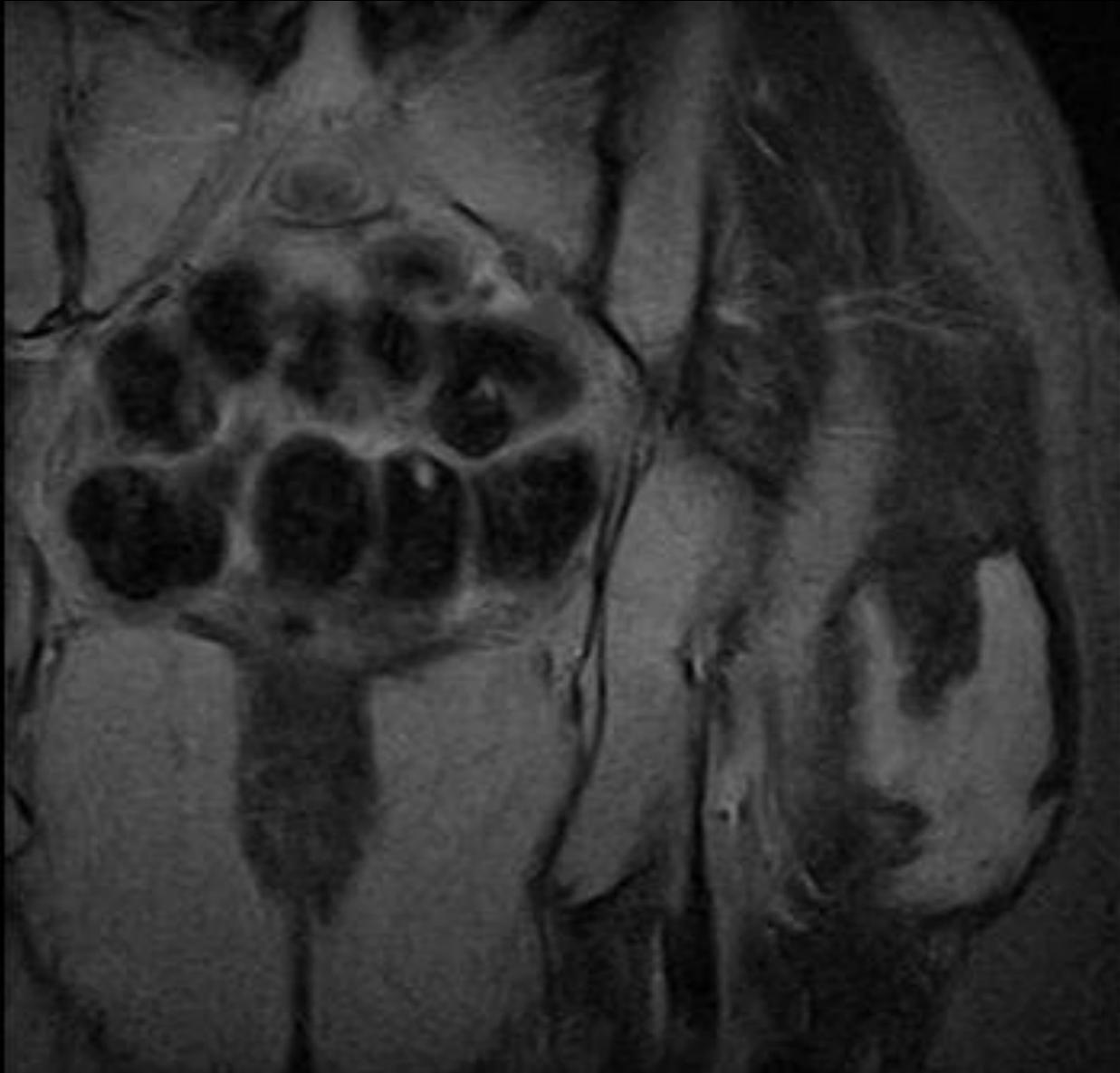


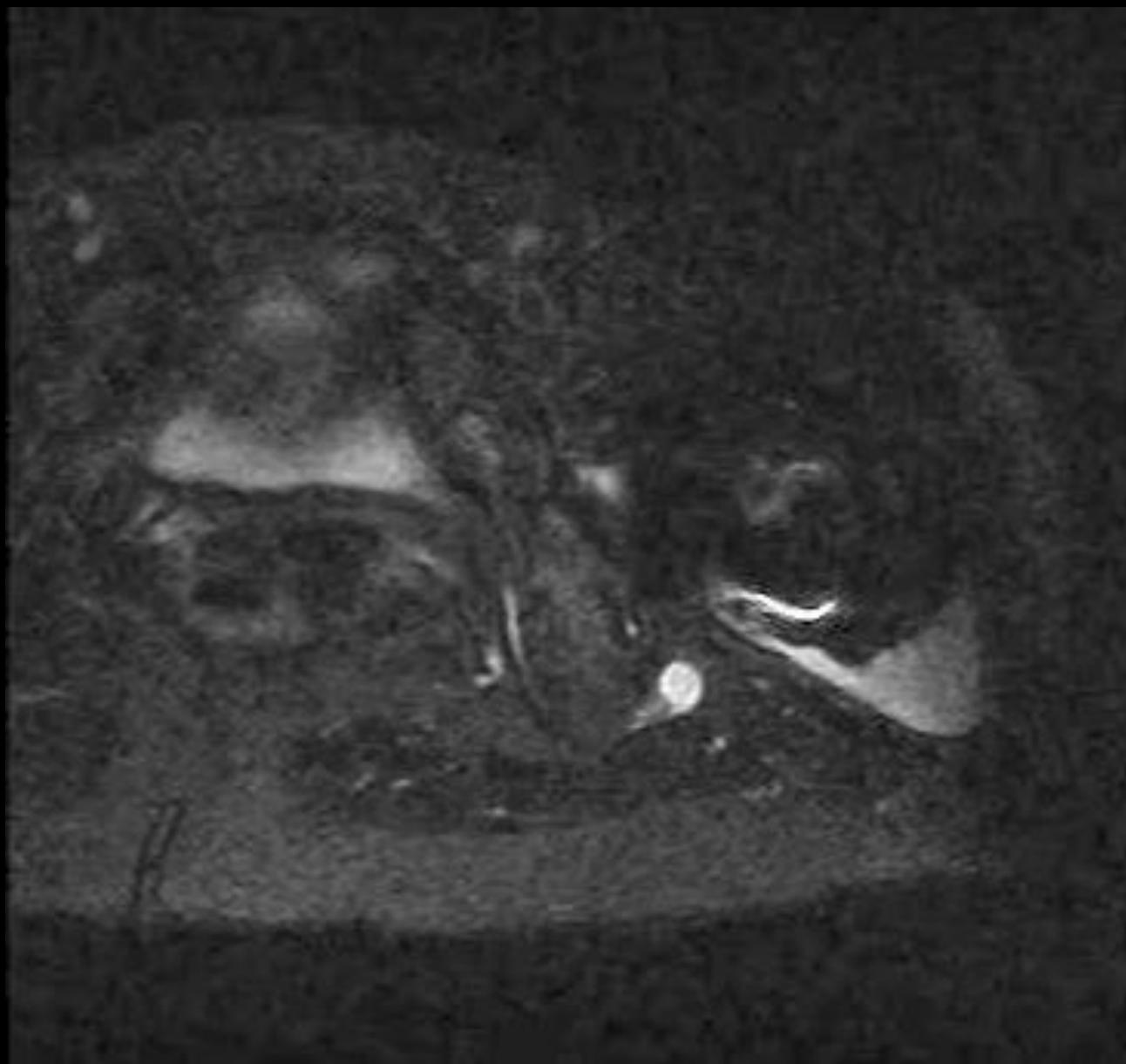
METAL ON METAL RESURFACING ARTHROPLASTY

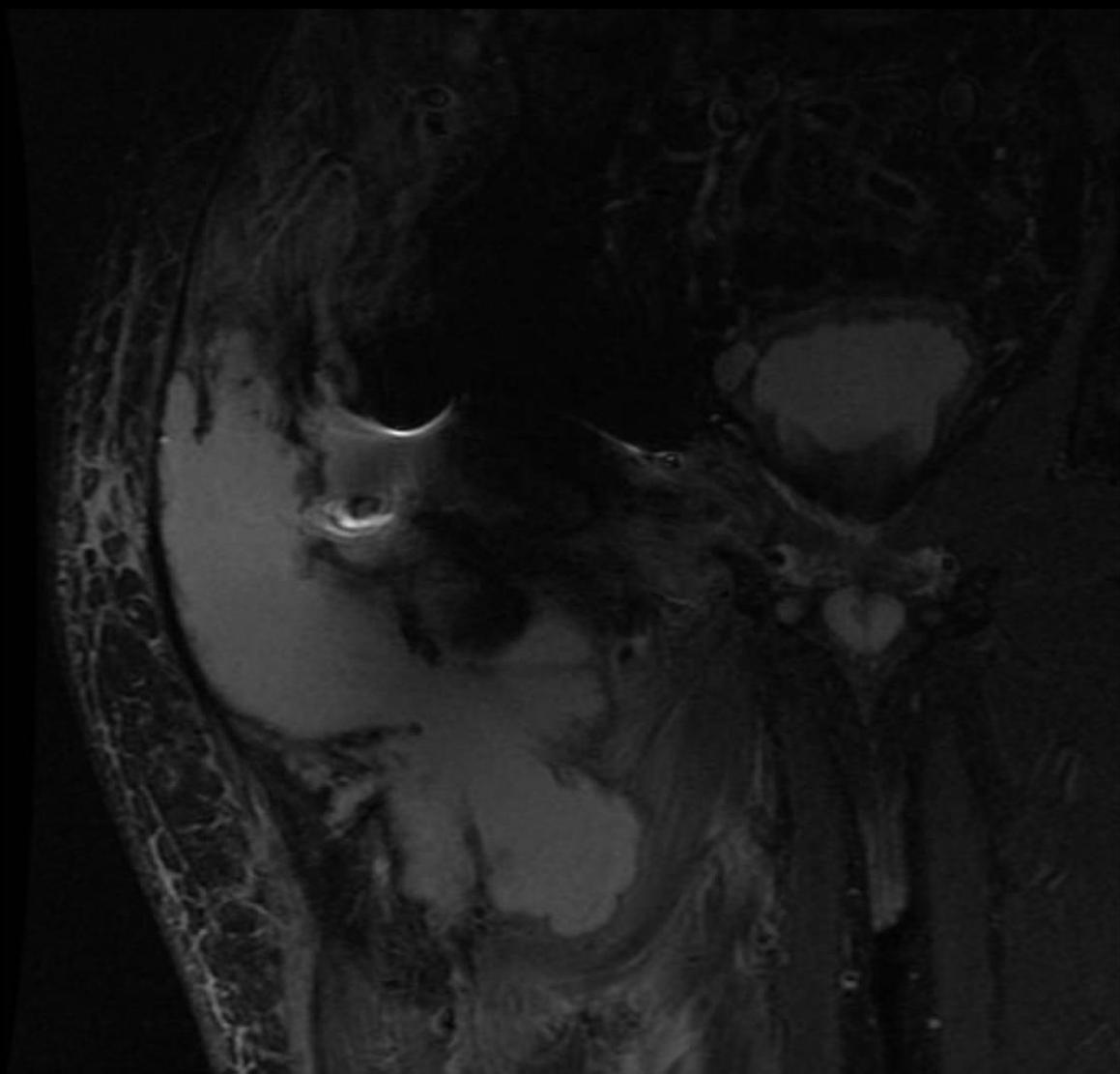
AMOL PATIL,MD.



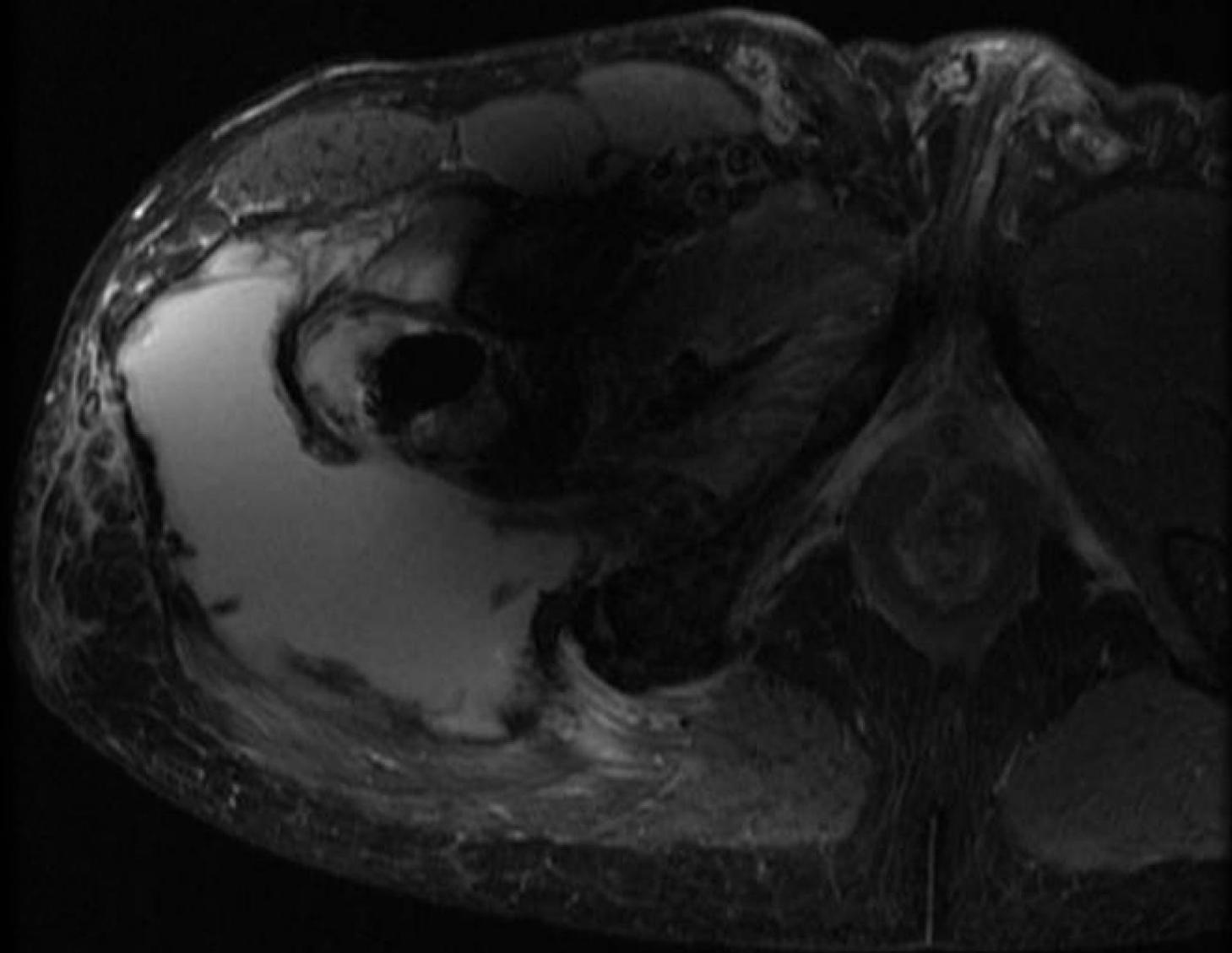


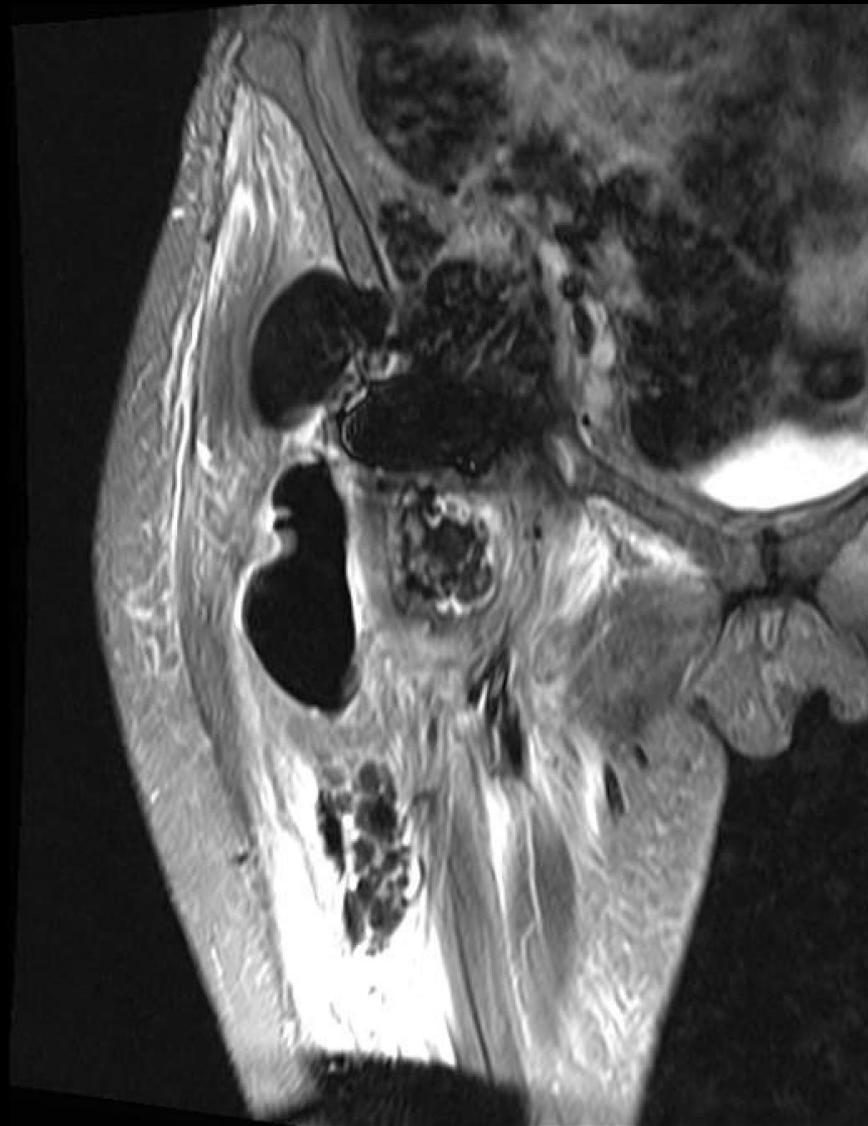






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METAL ON METAL (MoM) ARTHROPLASTY

- The most common type of total hip prosthesis comprises a metal head within a high density polyethylene acetabular cup (often backed by a metallic liner)
- MoM both sides of the articulation are metallic
- Second generation metal on metal (MoM) prosthesis introduced in the 1990's; Improvement in the understanding of bearing tribology and manufacturing technique
- Advantages :
 - Longer life expectancy with minimal wear
 - Targeted towards younger group of patients
 - No polyethylene particle debris (aseptic osteolysis)
- Large-diameter metal-on-metal (MoM) resurfacing of the hip and conventional total hip replacement (THR)

METAL ON METAL (MoM) ARTHROPLASTY

- Generation of metallic debris
- Immunological response to metal ions; Type IV Hypersensitivity
- Complications:
 - Perivascular lymphocytic infiltration (Pseudotumor / ALVAL)
 - Soft tissue necrosis
 - Tendon rupture
 - Aseptic osteolysis
- Can occur in asymptomatic well functioning arthroplasties

Abstract ▾

[J Bone Joint Surg Br.](#) 2010 Jan;92(1):38-46. doi: 10.1302/0301-620X.92B1.22770.

Early failure of metal-on-metal bearings in hip resurfacing and large-diameter total hip replacement: A consequence of excess wear.

[Langton DJ](#)¹, [Jameson SS](#), [Joyce TJ](#), [Hallab NJ](#), [Natu S](#), [Nargol AV](#).



**ADVERSE REACTION TO METAL DEBRIS
(ARMD)**

ASEPTIC LYMPHOCYTIC VASCULITIS-ASSOCIATED LESIONS (ALVAL)

- Pseudotumor; 2005 Willert et al. described pronounced perivascular lymphocyte and plasma cell infiltration adjacent to MoM arthroplasties
- Incidence: 4% to 71% depending on patient population and implant type
- Periprosthetic collection of any size of fluid or solid signal intensity, excluding iliopsoas bursal distention
- Pseudotumors are most commonly located at the posterolateral aspect of the joint, often in continuity with the greater trochanter
- Posterior lesions – Cystic / Anterior lesions – Solid - ?
- Low signal intensity T2 rim – susceptibility artifact from metal debris in wall

Metal-on-Metal Total Hip Arthroplasty: Do Symptoms Correlate with MR Imaging Findings?

Eric Y. Chang, MD, James L. McAnally, MD, James R. Van Horne, MD, Sheronda Statum, MS, Tanya Wolfson, MA, Anthony Gamst, PhD, and Christine B. Chung, MD

From the Department of Radiology, Veterans Affairs San Diego Healthcare System, 3350 La Jolla Village Dr, MC 114, San Diego, CA 92161 (E.Y.C., C.B.C.); Department of Radiology, University of California, San Diego, Medical Center, San Diego, Calif (E.Y.C., S.S., T.W., A.G., C.B.C.); Medford Radiological Group, Medford, Ore (J.L.M.); and Paragon Orthopedic Center, Grants Pass, Ore (J.R.V.H.).

Imaging Finding	Score
Presence of periprosthetic osteolysis	0, none; 1, present
Presence of pseudotumor	0, none; 1, present
Maximum size	...
Communication with pseudocapsule	0, no communication; 1, possible communication; 2, communication
Wall thickness (excluding nodular synovial regions)	0, <3 mm; 1, >3 mm
Synovial hypertrophy	0, none; 1, mild (small nodular or frondlike synovium protruding into collection); 2, severe synovial hypertrophy (>50% of collection or plaque of proliferation >2 cm in any dimension)
Compartmentalization	0, unicompartmental; 1, multiseptate (complete septae) or polylobulated
Soft-tissue erosion (muscle or tendon)	0, none; 1, present
Solid portion (hypointense on all sequences)	0, none; 1, present
Presence of marrow edema	0, none; 1, present
Presence of high-grade abductor tendon tear	0, none; 1, present
Presence of gluteus minimus or gluteus medius muscle atrophy	0, none; 1, some fatty streaks present; 2, fat evident and muscle greater than fat; 3, fat evident, muscle equal to fat; 4, fat evident, muscle less than fat

Grading the severity of soft tissue changes associated with metal-on-metal hip replacements: reliability of an MR grading system.

Anderson H¹, Toms AP, Cahir JG, Goodwin RW, Wimhurst J, Nolan JF.

Grade	Description	Criteria
A	Normal or acceptable	Normal postoperative appearance, including seromas and small hematomas
B	Infection	Fluid-filled cavity with high-signal-intensity T2 wall; inflammatory changes in soft tissues with or without bone marrow edema
C1	Mild metal-on-metal disease	Periprosthetic soft-tissue mass with no hyperintense T2-weighted fluid signal or fluid-filled periprosthetic cavity; either <5 cm maximum diameter
C2	Moderate metal-on-metal disease	Periprosthetic soft-tissue mass/fluid-filled cavity >5 cm diameter or C1 lesion with either of following: (a) muscle atrophy or edema in any muscle other than short external rotators or (b) bone marrow edema: hyperintense on short inversion time inversion recovery
C3	Severe metal-on-metal disease	Any of the following: (a) fluid-filled cavity extending through deep fasci, (b) tendon avulsion, (c) intermediate T1-weighted soft-tissue cortical or marrow signal, (d) fracture

DIFFERENTIALS

- Infection :

Ill-defined

Usually T2 hyperintense rim (vs T2 hypointense rim)

Extensive surrounding soft tissue edema

- Abductor tendon avulsion: can co-exist

Bone Joint J. 2015 Sep;97-B(9):1175-82. doi: 10.1302/0301-620X.97B9.35247.

Similar incidence of periprosthetic fluid collections after ceramic-on-polyethylene total hip arthroplasties and metal-on-metal resurfacing arthroplasties: results of a screening metal artefact reduction sequence-MRI study.

Bisseling P¹, de Wit BW¹, Hol AM¹, van Gorp MJ¹, van Kampen A², van Susante JL¹.