Poster #7

Superior Capsular Reconstruction for Irreparable Rotator Cuff Tears: Imaging Features and Complications

Pamela Walsh, MD; Mohammad Samim, MD; Luis Beltran, MD
NYU Medical Center/ Hospital for Joint Diseases Langone Medical Center, New York, NY, USA
(Presented by: Pamela Walsh, MD, NYU Medical Center/ Hospital for Joint Diseases Langone Medical Center)

Purpose: Superior Capsular Reconstruction (SCR) is a recent surgical procedure for irreparable massive rotator cuff tears, which can be challenging to evaluate on postoperative MRI, especially assessing for graft failure. Our purpose is to report MRI features of SCR and complications.

Materials and Methods: Digital database retrospective query was performed to identify SCR cases. Clinical data was reviewed with attention to postoperative pain as correlates for graft failure. Postoperative MRI studies were reviewed with attention to 1) humeral head position 2) graft detachment 3) suture anchor placement 4) graft position 5) muscle atrophy.

Results: 6 patients (3 women, 3 men, ages 55-71, mean 63, median 62) imaged 1-10 months after SCR were evaluated. One patient underwent SCR revision after imaging demonstrated failure of the first repair. Of the 7 SCR procedures, 5/7 reported shoulder pain postoperatively, 3 demonstrated superior translation of the humeral head greater than 10 mm above the superior glenoid and detachment of the allograft from either the glenoid or humeral insertion. 6/7 cases had two glenoid anchors placed in the posterosuperior quadrant of the glenoid with corresponding allograft coursing over the posterosuperior aspect of the humeral head. All patients had at least grade III supraspinatus atrophy and at least grade II infraspinatus atrophy. Other complications included dislodged suture anchor into the deltoid and tear of the graft from an infraspinatus myotendinous anastomosis. Two patients did not report postoperative pain and showed intact grafts with the superior aspect of the humeral head no more than 7 mm above the superior glenoid on postoperative MRI.

Conclusion: Following SCR, signs of graft failure include postoperative pain, high riding humeral head greater than 10 mm, and graft detachment on postoperative MRI.

Modality % - Radiography / Fluoroscopy:	0
Modality % - CT:	0
Modality % - MRI:	100
Modality % - US:	0
Modality % - Nuclear Medicine:	0

70 year old female status post Superior Capsular Reconstruction. No reported post-operative pain.

70-year-old female status post superior capsular reconstruction. No reported post-operative pain with intact capsular reconstruction.

59 year old male status post Superior Capsular Reconstruction Revision with post-operative pain and loss of range of motion.

59 year-old-man status post superior capsular reconstruction revision with post-operative pain and loss of range of motion with failure of the capsular reconstruction.

Poster #12

RADIOLOGIC EVALUATION OF ABNORMALITIES OF THE STERNUM AND STERNOCLAVICULAR JOINTS

Sailaja Yadavalli, MD, PhD; Jason Esterle, MD; Christopher Nall, MD
Beaumont Health System, Royal Oak, MI, USA
(Presented by: Sailaja Yadavalli, MD, PhD, Beaumont Health System)

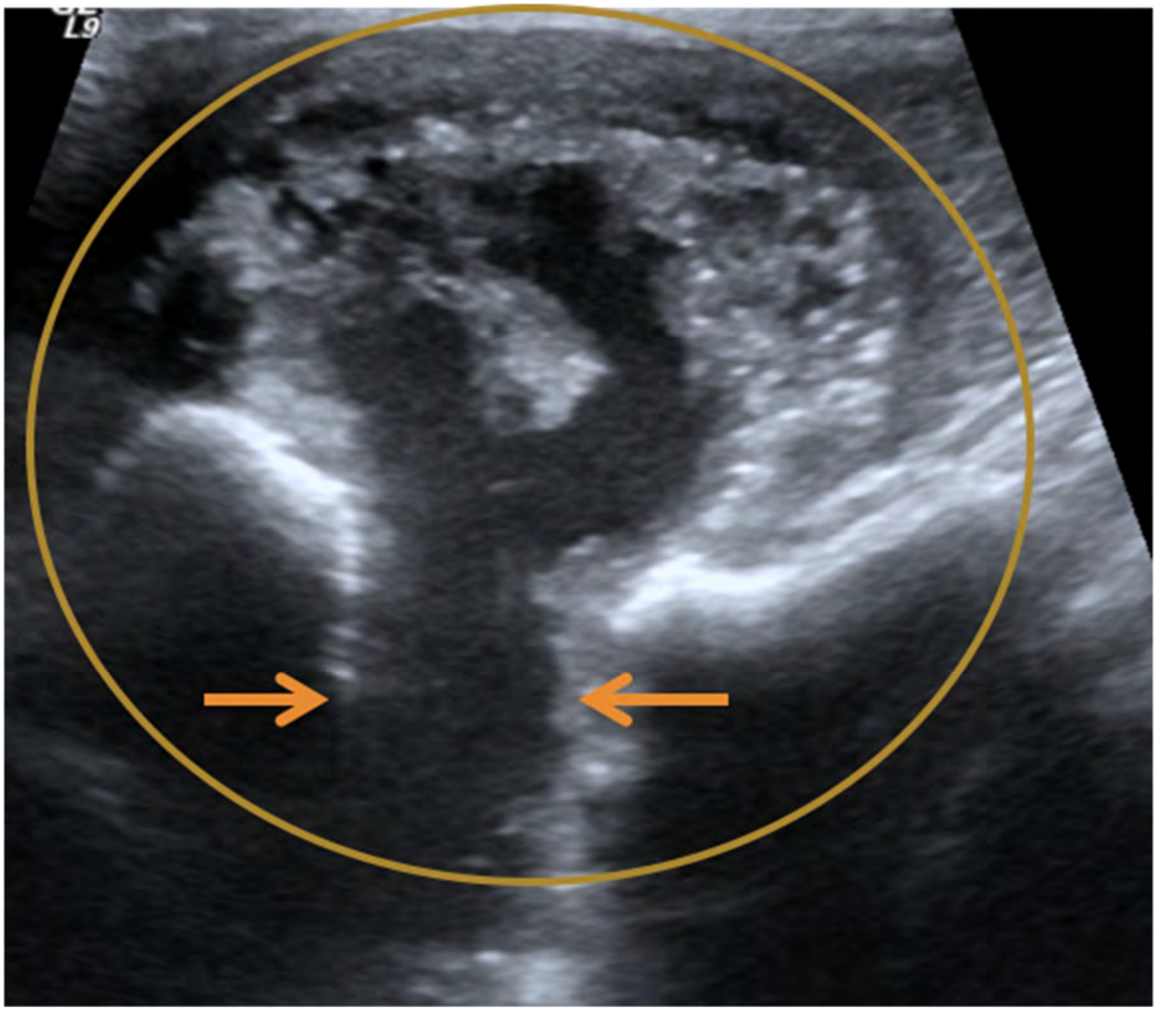
Purpose: The exhibit will review normal anatomy, congenital anomalies and pathologic conditions that involve the sternum and sternoclavicular joints. Although these structures are included daily on countless radiologic studies, they are often given only a perfunctory glance by radiologists. The close proximity of these anterior chest wall structures to vital mediastinal organs makes it important for radiologists to be familiar with acute and chronic processes that may involve them. A missed diagnosis may lead to significant morbidity and mortality such as with mediastinitis or traumatic injury of adjacent vessels.

Materials and Methods: The exhibit will first review the complex normal anatomy of the sternoclavicular joint and sternum and some of the commonly seen congenital or developmental anomalies. Following this, using a case based approach, we will present imaging findings related to various pathologic conditions that may affect the sternum and sternoclavicular joints. The presentation will also discuss optimal imaging techniques and include radiographs, CT, MRI and ultrasound images. Where relevant interventional techniques will also be discussed.

Results: Sternum and sternoclavicular joints are often injured in anterior chest wall trauma and should be reviewed with great care as abnormalities may be subtle, easily overlooked or evident only on sagittal reformatted CT images. The sternoclavicular joint is a synovial joint and may be affected by inflammatory arthritides. Distinguishing between inflammatory processes, osteoarthrosis and infections affecting the joint may sometimes be difficult and need additional clinical information or joint aspiration. Awareness of postoperative complications that may follow mediastinal surgery is important to avoid significant morbidity and mortality. Tumors involving the sternum are most often metastasis and malignant.

Conclusion: Familiarity with different abnormalities affecting the sternoclavicular joint and sternum and optimal imaging techniques is important in making an accurate diagnosis where findings may be subtle and easily overlooked.

Modality % - Radiography / Fluoroscopy:	10
Modality % - CT:	70
Modality % - MRI:	10
Modality % - US:	10
Modality % - Nuclear Medicine:	0



Sternoclavicular joint mass- fluid collection with destruction of manubrium is seen by CT and US. Diagnosis of chronic S.Aureus infection made after aspiration.

Note dehiscence of sternum seen on scout and axial CT images. Findings on axial image show patient's increased risk for developing mediastinitis.

Poster #13

CT GUIDED CORE NEEDLE BONE BIOPSY IN THE WORKUP OF OSTEOMYELITIS: DIAGNOSTIC YIELD AND EFFECT ON PATIENT CARE.

Donald von Borstel, DO; Cameron Smith, DO; Gregory Bradley, DO; Sindhura Alapati, MD
Oklahoma State University Medical Center, Tulsa, OK, USA
(Presented by: Donald von Borstel, DO, Oklahoma State University Medical Center)

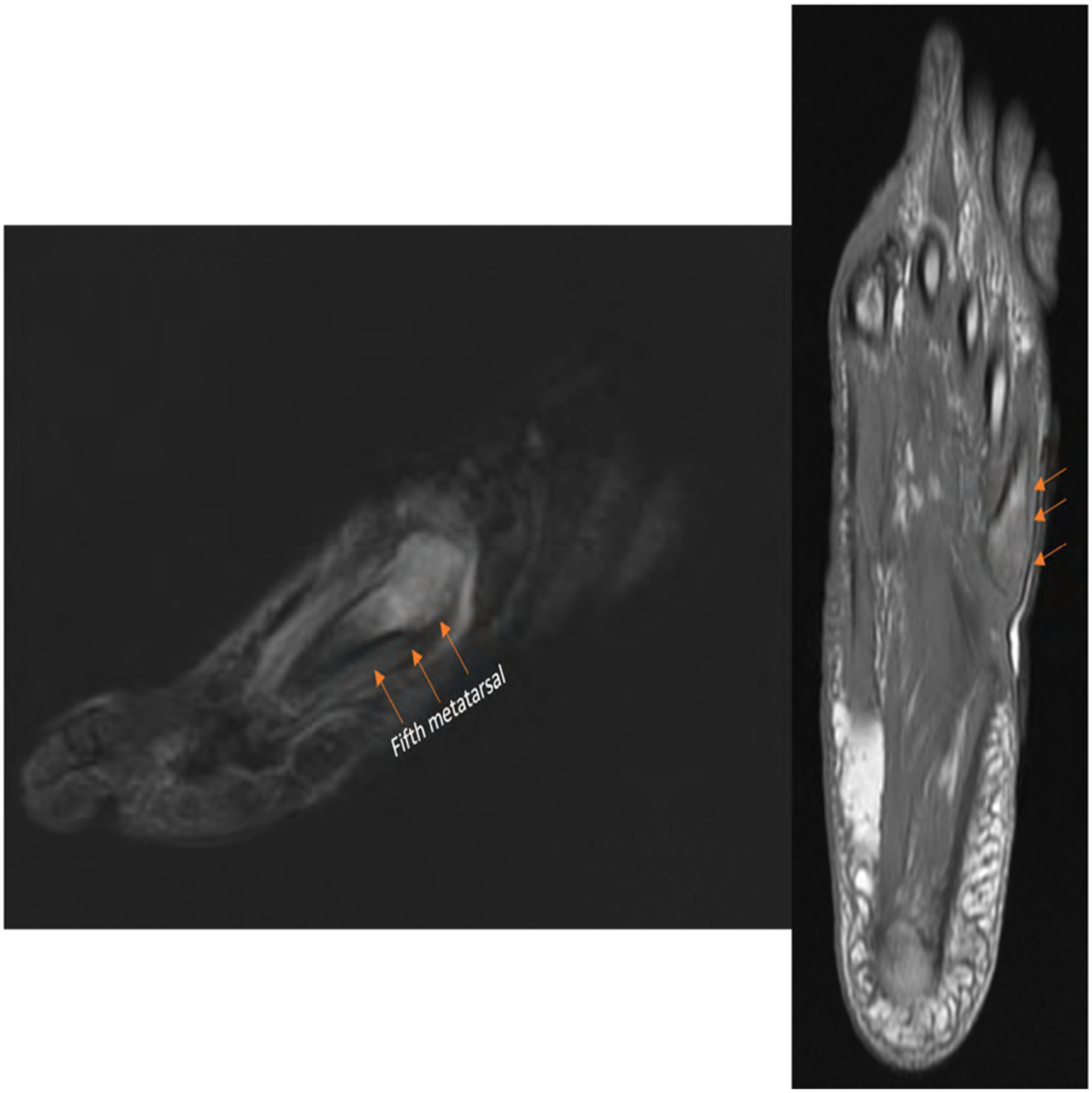
Purpose: To examine the overall diagnostic yield of bone biopsy in the setting of osteomyelitis and its role in management.

Materials and Methods: A retrospective review of 35 bone biopsies performed by a single institution for suspected osteomyelitis. Data collected and analyzed from these cases included biopsy location, culture and pathology results, preoperative MRI impressions, and antibiotic therapy prior to and after culture. Culture was presented as negative or positive and used as the primary outcome for diagnostic yield. Nine of the thirty-five cases were excluded from analysis due to incomplete culture results or unknown use of antibiotics. A total of twenty-six cases were included in the final analysis.

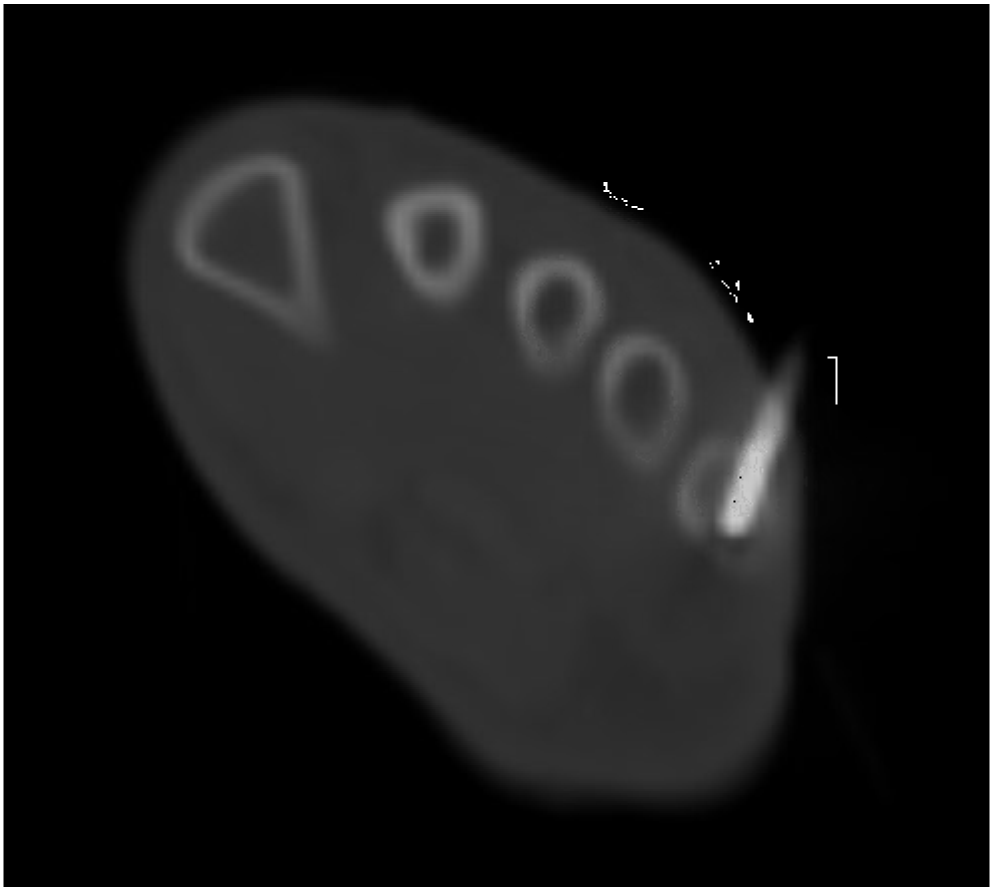
Results: Of the 26 cases reviewed from our institution, 30.8% were diagnostic of an organism on culture. Of the 8 positive cases, 6 had change in antibiotic therapy based on the bone culture results. Of the 8 cases with positive bone culture results, 6 had identical wound culture results. There was no change in long-term broad-spectrum antibiotic therapy in 16 of 26 cases. MRI positive findings for osteomyelitis showed a statistically significant association with antibiotic therapy ($p = 0.0004$) versus nonsignificance of culture positive results ($p = 0.428$). Statistical analysis performed with Microsoft Excel version 15.38.

Conclusion: From our study, appendicular image-guided biopsy is a relatively low-yield procedure, approximately 31% had positive culture results. In most cases bone biopsy plays a minor role in overall diagnosis and treatment, as approximately 70% of biopsies were negative with no change in overall treatment. Based on our review, MRI appears adequate to diagnose osteomyelitis with little value added when biopsy was performed. This calls into question whether an invasive biopsy and sedation is worth the cost and clinical risk to the patient.

Modality % - Radiography / Fluoroscopy:	25
Modality % - CT:	22
Modality % - MRI:	50
Modality % - US:	0
Modality % - Nuclear Medicine:	6



Sagittal STIR and Coronal T1-weighted images showing STIR-hyperintense and T1-hypointense marrow signal compatible with osteomyelitis.



Axial intraoperative image displaying the biopsy needle within the fifth metatarsal base. This was diagnosed as osteomyelitis on the pre-procedural MRI.

Poster #15

CURRENT TRENDS IN MODALITY SELCETION FOR IMAGE-GUIDED MUSCULOSKELETAL PROCEDURES:FACTORS THAT INFLUENCE ULTRASOUND VERUS NON-ULTRASOUND UTILIZATION

Judah Goldschmiedt, MD; Danielle Williams, MD; Chaitanya Shilagani, DO
Westchester Medical Center, Valhalla, NY, USA
(Presented by: Judah Goldschmiedt, MD, Westchester Medical Center)

Purpose: To determine and describe current trends in selection of imaging modality for image-guided musculoskeletal procedures.

Materials and Methods: An anonymous online questionnaire was sent to members of the Society of Skeletal Radiology, inquiring about current patterns in clinical practice related to image guided and therapeutic joint injections. Shoulder and hip joints were chosen as clinical examples and were evaluated separately in relationship to several variables such as clinical practice experience, type(s) of subspecialty training, practice setting and modality chosen.

Results: In general, respondents seemed to strongly favor the use of fluoroscopy over ultrasound across studied variables (years in clinical practice, practice setting) for both shoulder and hip joint injections. Statistically significant differences in the proportion of ultrasound utilization was only observed with hip injections when compared across practice settings (academic, hybrid, and private practice; p=0.03), with ultrasound being performed at hybrid practice models at a rate of 16% (9/57). Otherwise, the proportion of ultrasound utilization did not differ across years of clinical experience or practice setting, when evaluated as independent variables or together.

Conclusion: Despite substantial support for the expansion of ultrasound as a desired guidance modality for musculoskeletal interventions, the majority of image guided shoulder and hip joint injections were primarily performed utilizing fluoroscopy. This may be a reflection of a deficiency in training or limited ultrasound availability in the reported academic, private practice or hybrid setting. Efforts to promote ultrasound training and implementation would be considered a worthwhile endeavor in order to promote this paradigm going forward.

Modality % - Radiography / Fluoroscopy:	85
Modality % - CT:	2
Modality % - MRI:	0
Modality % - US:	13
Modality % - Nuclear Medicine:	0

Practice Set	Years of Pr	Fluoroscop	Ultrasound	Total	Fisher Exact
Academic					p=0.94
n=166	0-5	43 (91)	4 (9)	47	
	6-10	38 (91)	4 (9)	42	
	11-20	35 (95)	2 (5)	37	
	>21	37 (93)	3 (7)	40	
Hybrid					p= 0.37
n=57	0-5	4 (67)	2 (33)	6	
	6-10	15 (83)	3 (17)	18	
	11-20	17 (94)	1(6)	18	
	>21	12 (80)	3 (20)	15	
Private					p=0.31
n=121	0-5	19 (86)	3 (14)	22	
	6-10	35 (95)	2 (5)	37	
	11-20	37 (97)	1 (3)	38	
	>21	22 (92)	2 (8)	24	

Tabulation of modality used by practice setting and clinical experience, shoulder injection only

Practice Set	Years of Pra	Fluoroscop	Ultrasound	Total	Fisher Exact
Academic					p=0.94
n=166	0-5	43 (91)	4 (9)	47	
	6-10	38 (91)	4 (9)	42	
	11-20	35 (95)	2 (5)	37	
	>21	37 (93)	3 (7)	40	
Hybrid					p= 0.37
n=57	0-5	4 (67)	2 (33)	6	
	6-10	15 (83)	3 (17)	18	
	11-20	17 (94)	1(6)	18	
	>21	12 (80)	3 (20)	15	
Private					p=0.31
n=121	0-5	19 (86)	3 (14)	22	
	6-10	35 (95)	2 (5)	37	
	11-20	37 (97)	1 (3)	38	
	>21	22 (92)	2 (8)	24	

Tabulation of modality used by practice setting and clinical experience, hip injection only

Poster #23

MRI OF THE LUMBOSACRAL PLEXUS: WHAT THE PRACTICING RADIOLOGIST NEEDS TO KNOW

Hailey Allen, MD; Megan Mills, MD; Miriam Peckham, MD; Lubdha Shah, MD; Kent Sanders, MD; Sarah Stilwill, MD
University of Utah Medical Center / SOM, Salt Lake City, UT, USA
(Presented by: Hailey Allen, MD, University of Utah Medical Center / SOM)

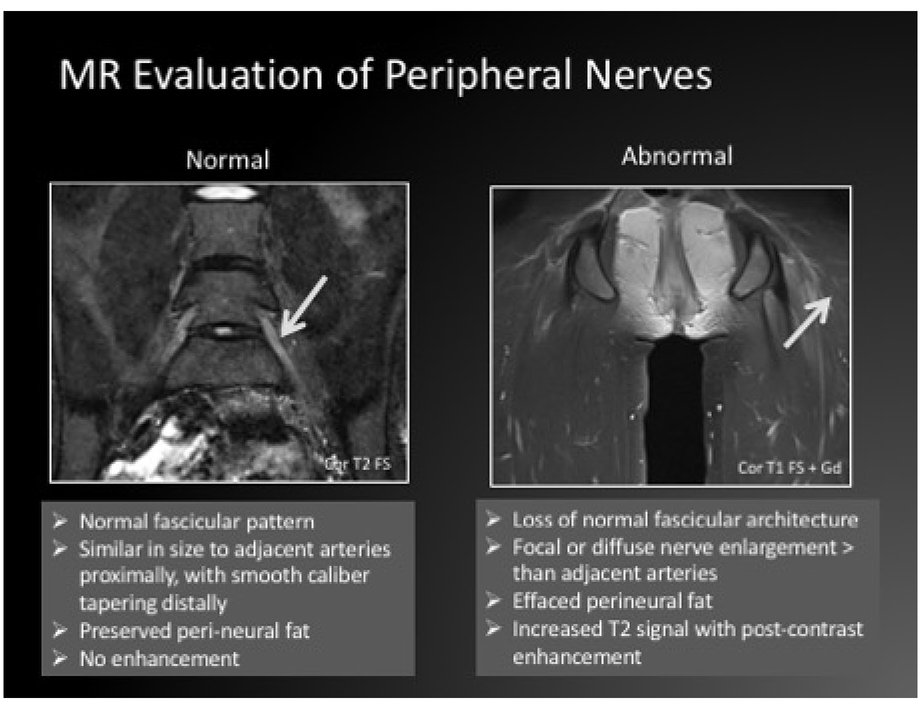
Purpose: To prepare radiology residents and aid the practicing radiologist in interpreting pathology encountered on MR imaging of the lumbosacral plexus.

Materials and Methods: The learner will be presented with a structured approach to identifying the key anatomic structures of the lumbosacral plexus on MR images, as well as a suggested search pattern for sequences obtained as part of a dedicated lumbosacral neurogram protocol. Upon completion of the exhibit, the learner should be proficient in recognizing the direct and indirect MR findings of commonly encountered lumbosacral plexus pathology.

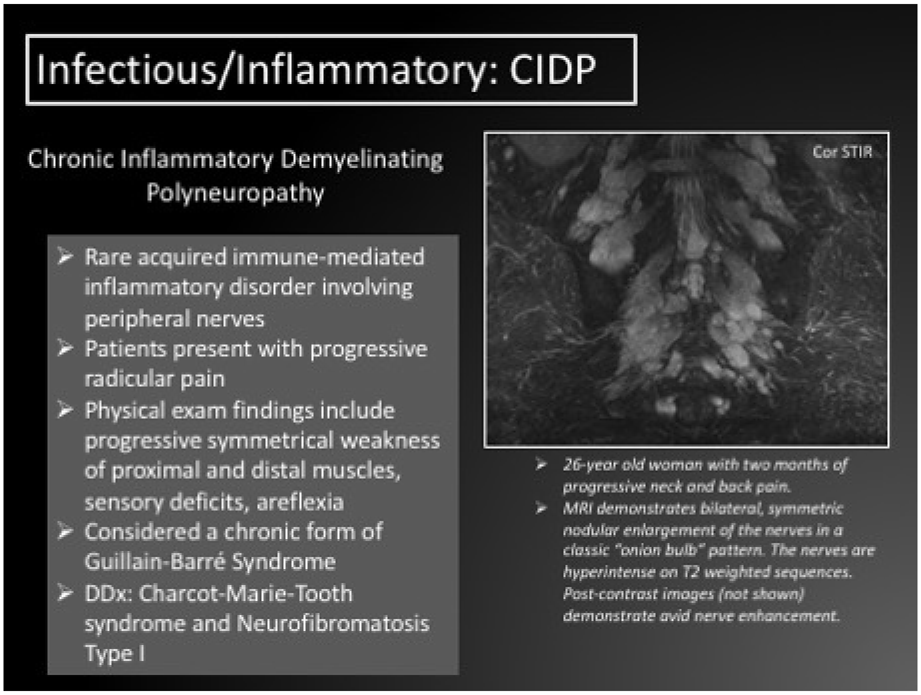
A. **Results:** Lumbosacral Plexus Normal Anatomy and Important Variants
B. Lumbosacral Plexus MRI Protocol Review
C. Systematic MRI search pattern
D. Case based imaging review of the following topics, including distinguishing MR imaging features of each entity, with direct and indirect imaging findings.
    a. Trauma
    b. Infectious and Inflammatory Pathology
    c. Congenital
    d. Tumor and Tumor-Like Conditions

Conclusion: A robust understanding of anatomy in combination with a systematic sequence-based approach to MRI interpretation is key to the identification and characterization of pathology involving the lumbosacral plexus.

Modality % - Radiography / Fluoroscopy:	0
Modality % - CT:	0
Modality % - MRI:	100
Modality % - US:	0
Modality % - Nuclear Medicine:	0



MRI Evaluation of Peripheral Nerves: Normal and Abnormal



Infectious/Inflammatory Pathology: Chronic Inflammatory Demyelinating Polyneuropathy

Poster #28

UTILITY OF MRI IN EVALUATING FOR OSTEOMYELITIS IN PATIENTS WITH CELLULITIS

Devon Klein, MD[1]; Brian Lee, MD[2]; Hariklia Bezhani, DPM[1]; Guillaume Stoffels, MS, MA[1]
[1]Lenox Hill Hospital, Northwell Health, New York, NY, USA; [2]Beth Israel Deaconess Medical Center Harvard Med School, Boston, MA, USA
(Presented by: Devon Klein, MD, Lenox Hill Hospital, Northwell Health)

Purpose: To assess the rates of OM in patients presenting with cellulitis with or without clinical features such as skin ulcers, comorbitiies and patient demographics.

Materials and Methods: We reviewed all MRIs of the lower extremity prerformed for evaluation of OM in patients with cellulitis over a 5 year periord. Only adult patients,were included. This resulted in 488 MRI examinations. 47 examinations were excluded.

The MRI reports were reviewed, looking for the presence or absence of osteomyelitis, abscess, and ulceration. Demographic information collected from the EMR included age, sex, diagnosis of diabetes, hyperlipidemia/ atherosclerotic disease, and/or peripheral vascular disease.

Univariable analyses were conducted to identify factors that might be associated with OM. A multivariable analysis, based on a logistic regression model, was carried out to determine which factors were associated with OM, when all proposed factors were considered simultaneously.

Results: Of the 441 included cases, 170 (39%) established a diagnosis of OM on the basis of the MRI findings. 236 (54%) had demonstrable ulceration on MRI, 66 (15%) had an abscess and 307 (70%) had the diagnosis of cellulitis by MRI.

Those with MRI findings of OM (170) and those without (271), there was no statistical difference for variables such as age ($p = 0.40$), laterality ($p = 0.69$), reporting physician ($p = 0.14$), patient class ($p= 0.19$). ,There was a statistically significant difference in rates of OM by gender, $p=0.0003$ in patietnts with diabietes,($p<0001$), hyperlipidemia/atherosclerotic disease ($p=0.001$ and those with ulceration by MRI ($p<0.0001$). No difference in rates of OM could be found in patients with documented PVD ($p=0.78$).

Conclusion: The perception that uncomplicated cellulitis often leads to underlying OM is not supported by this study.

Modality % - Radiography / Fluoroscopy:	0
Modality % - CT:	0
Modality % - MRI:	100
Modality % - US:	0
Modality % - Nuclear Medicine:	0

Sag STIR imaging demostrates ulceration at plantar tip of hallux. The marrow of the distal phalanx is diffuesely replaced by signal hyperintensity

On T1 weighted imaging the marrow fat is replaced by hypointense signal and lss of the cortical margins is more conspicuous.

Poster #29

MUSCLE EDEMA - RECOGNIZING PATTERNS AND ASSOCIATED CAUSES

Sailaja Yadavalli, MD, PhD; Michael Hierl, MD; David Marcantonio, MD
Beaumont Health System, Royal Oak, MI, USA
(Presented by: Sailaja Yadavalli, MD, PhD, Beaumont Health System)

Purpose: The focus of the exhibit is to provide an educational review of edema patterns seen in muscles on Magnetic Resonance Imaging (MRI) due to various causes, correlating them with associated findings within the muscles or adjacent structures and with relevant clinical history in order to make an accurate diagnosis.

Materials and Methods: The exhibit will utilize a case based format to review muscle edema patterns and distribution that may be seen on MRI due to various clinical entities including, but not limited to, infectious, inflammatory and neoplastic processes, trauma and nerve injuries. Description of additional pathology within the muscles and adjacent structures will also be included in the discussion. Where needed clinical history and data will also be highlighted to illustrate how these may help in making a diagnosis or in narrowing the differential. The discussion will also include the benefits of utilizing intravenous contrast or other imaging modalities such as radiography, ultrasound or CT when appropriate.

Results: Muscle edema is often seen on MRI in everyday practice. The cause of the edema signal may not be readily apparent, resulting in delayed or wrong diagnosis or unnecessary intervention. Many causes of muscle edema may be recognized by the pattern and distribution such as with denervation injuries. Recognizing associated findings such as in the cases of myositis ossificans and correlating with radiographs or CT may be important in making the correct diagnosis. Distinguishing between boundaries of a tumor and related reactive edema is important in the staging process. These are just a few examples of cases that will be presented in the exhibit.

Conclusion: Awareness and understanding of edema patterns in muscles on MRI and knowledge of associated findings are important for the Radiologist to make an accurate diagnosis and avoid delay in treatment or unnecessary interventions.

Modality % - Radiography / Fluoroscopy:	5
Modality % - CT:	5
Modality % - MRI:	85
Modality % - US:	5

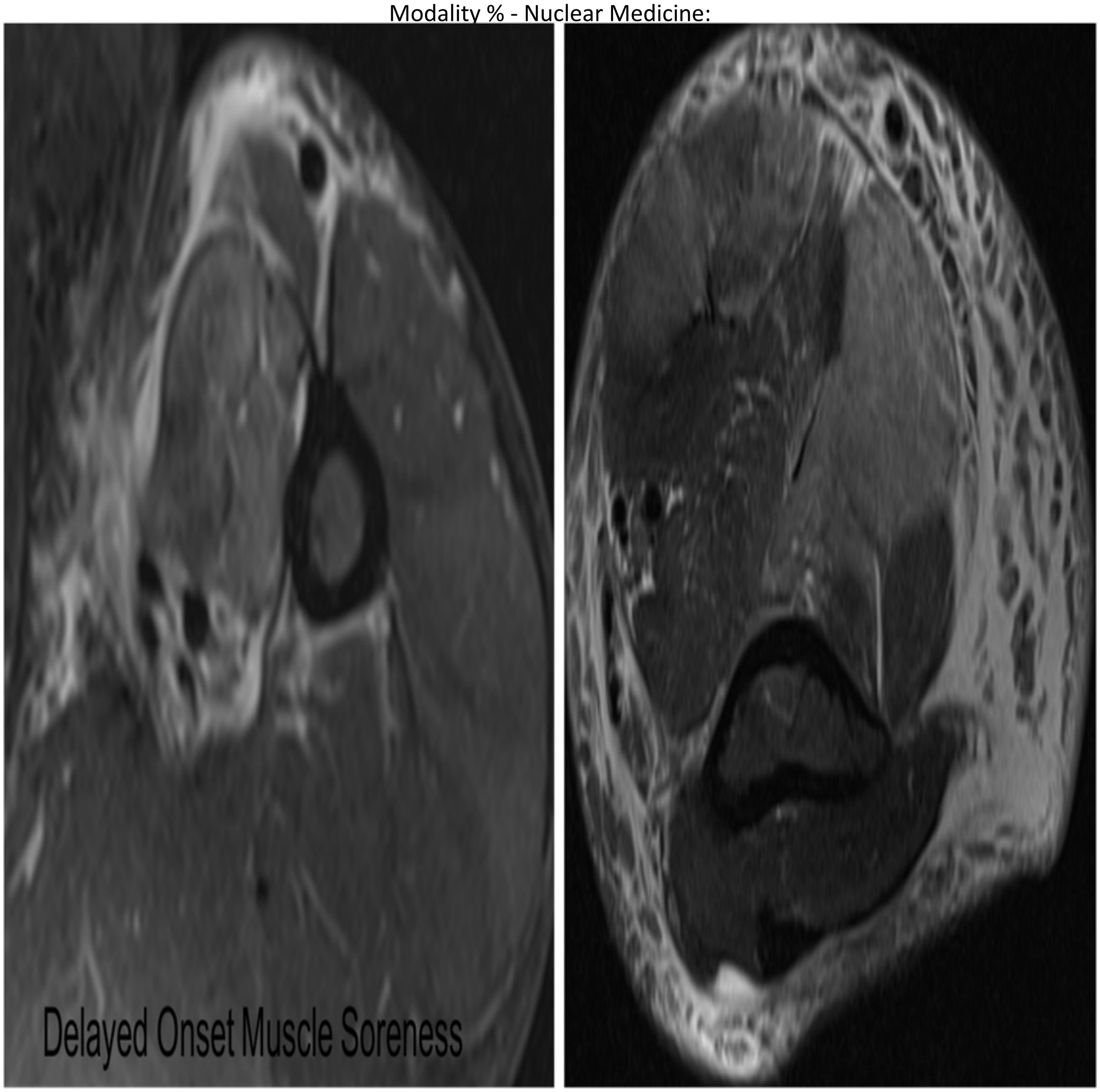


Figure 1: T2 FS Axial: Upper arm edema developed in a construction worker a few days after lifting weights and breaking cement the next day.

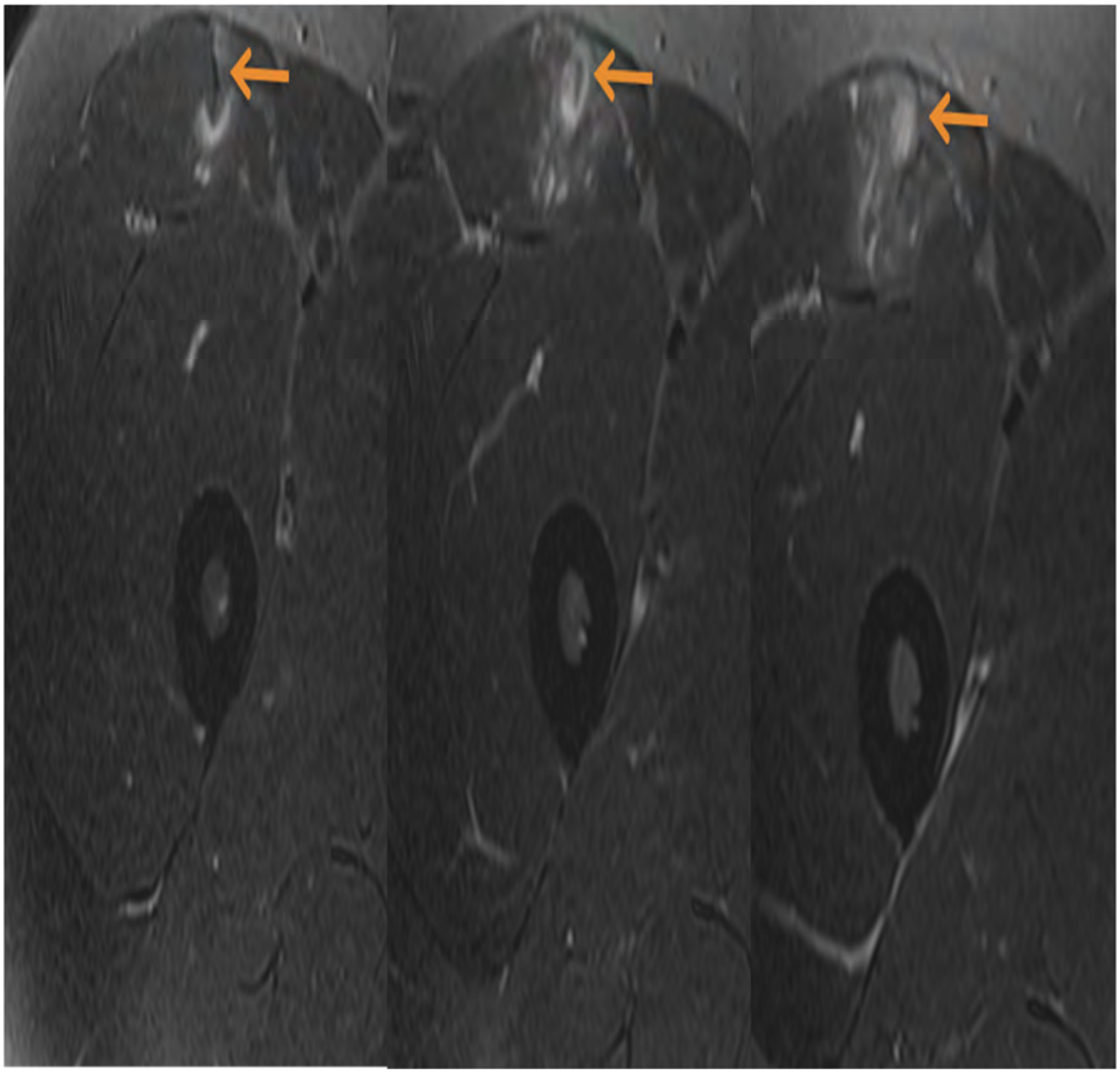


Figure 2: T2 FS Axial: Edema in the rectus femoris muscle secondary to intramuscular degloving injury.

Poster #35

THE INCIDENCE, ONSET AND DISTRIBUTUION OF CRYSTAL DEPOSITION WITHIN THE CERVICAL SPINE

Eric Walker, MD[1]; Dylan Simmons, DO[2]; Joshua Tice, MD[3]; Jonelle Petscavage-Thomas, MPH, MD[1]
[1]Penn State Milton S. Hershey Medical Center, Hershey, PA, USA; [2]Emory University Dept. of Radiology, MSK Division, Atlanta, GA, USA; [3]West Reading Radiology Associates, West Reading, PA, USA
(Presented by: Eric Walker, MD, Penn State Milton S. Hershey Medical Center)

Purpose: To examine the incidence, age of onset and distribution of crystal deposition withing the cervical spine.

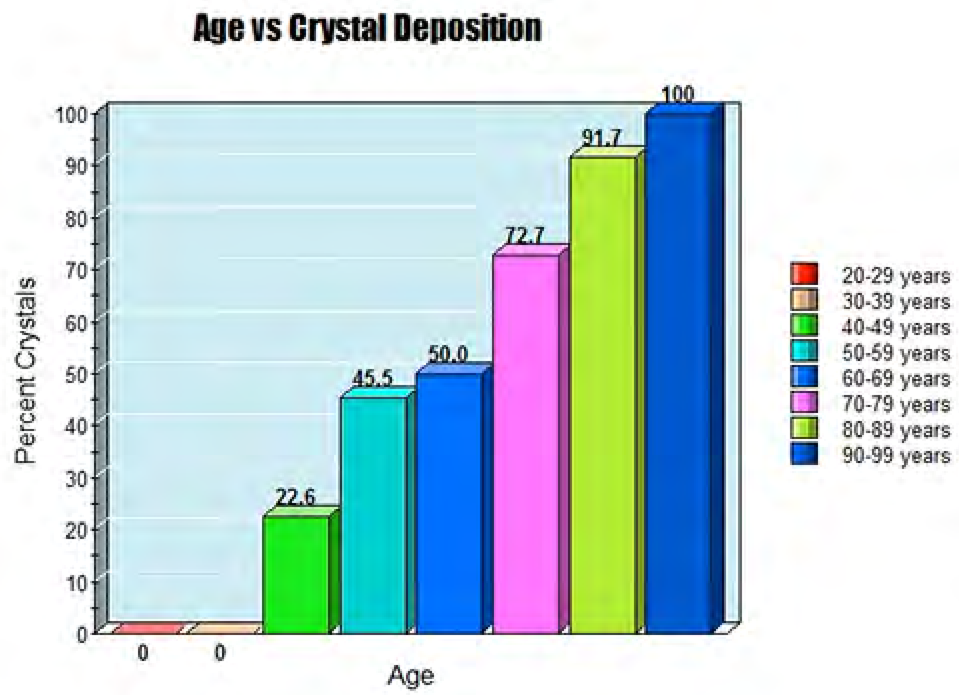
Materials and Methods: We retrospectively reviewed 170 cervical spine computed tomography (CT) examinations obtained in the emergency department. CT studies were reviewed by three musculoskeletal radiologists with agreement by consensus. Evaluation included patient age and evaluation for crystal deposition. Locations evaluated included the transverse ligament, the anterior longitudinal ligament, the posterior longitudinal ligament, the longus colli, the annulus fibrosis, the nucleus pulposus, the facet joints, the ligamentum flavum, the interspinous ligament, and the supraspinal ligament.

Results: Patients between one and 39 years-of-age (76) demonstrated no crystal deposition. Crystal deposition was noted in seven of 31 patients (22.6%) between the ages of 40 and 49, five of 11 patients (45.5%) between the ages of 50 and 59, nine of 18 patients (50%) between the ages of 60 and 69, 11 of 12 patients (91.7%) between the ages of 80 and 89, and 11 of 11 patients (100%) between the ages of 90 and 99. The most common locations in patients with crystal deposition include the annulus fibrosis (96.0%), the nucleus pulposus (76.5%), the facet joints (37.3%), the transverse ligament (33.3%), the ligamentum flavum (19.6%), the posterior longitudinal ligament (15.7%), the interspinous ligaments (5.9%) and the longus colli and supraspinus ligament (both 3.9%).

Conclusion: Crystal deposition in the cervical spine is more prevalent at higher patient age. The annulus fibrosis is the most common location of deposition.

Modality % - Radiography / Fluoroscopy:	0
Modality % - CT:	76
Modality % - MRI:	0
Modality % - US:	0
Modality % - Nuclear Medicine:	0

Crystals within the annulus fibrosis (arrowhead) and nucleus pulposus (curved arrow).



Percent prevalence of crystal deposition versus age of the patient.

Poster #37

Imaging Features of Calciphylaxis

Ryan Franke, MD; Mark Kransdorf, MD; Michael Fox, MD; F. Chivers, MD; Jonathan Flug, MD
Mayo Clinic, Phoenix, AZ, USA
(Presented by: Ryan Franke, MD, Mayo Clinic)

Purpose: Background: Calciphylaxis is an uncommon condition most commonly found in patients with end-stage renal disease, estimated to affect up to 4% of that population. Typical clinical presentation includes ischemia and necrosis of the skin, soft tissues, and organs with small vessel vascular calcifications visible on imaging exams. Because of its association with infection and organ failure, mortality rates as high as 60-80% have been reported. We reviewed our experience with the imaging features of 11 patients with calciphylaxis to identify the imaging feature characteristic of the uncommon entity.

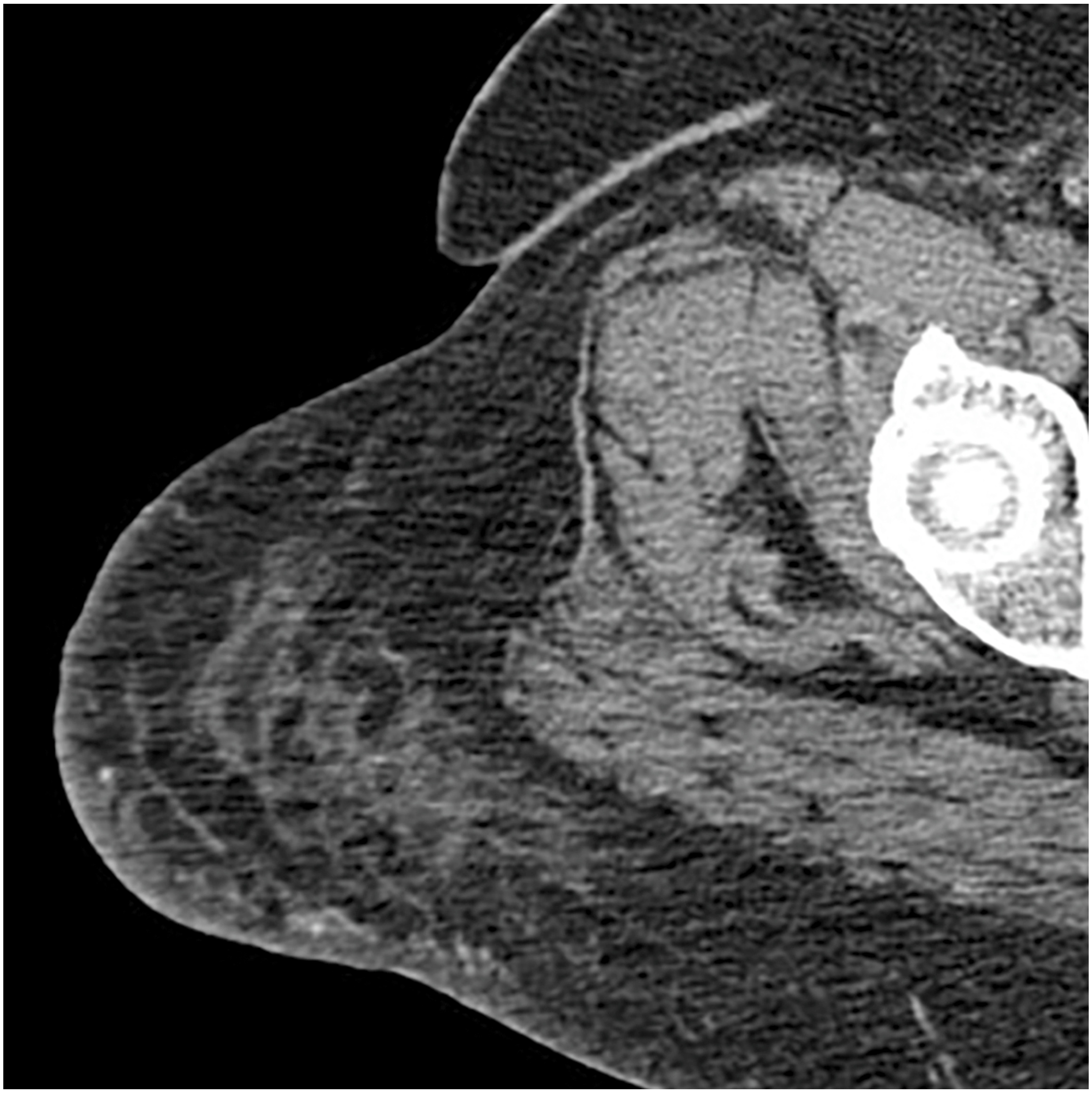
Materials and Methods: We retrospectively reviewed all available records in our institutional electronic pathology report data base for all patients with a diagnosis of “calciphylaxis.” A total of 43 patients were identified. All pathology reports and imaging studies for these patients were reviewed. Study group inclusion criteria required: (a) definitive pathological diagnosis of calciphylaxis or findings “strongly suggestive” of calciphylaxis and (b) imaging studies (radiographs, CT, bone scan and/or US) of the area of the biopsy.

Results: The study group included 11 patients, four men and seven women, with and average age of 52 years (range 37-77 years). Imaging studies reviewed included radiographs (all patients), CT (5 patients) and bone scan (2 patients). The dominant imagine feature was fine small vessel vascular calcification within the subcutaneous adipose tissue just deep to the skin. This was seen well on both radiographic and CT examinations. Skin thickening and varying amounts of associated panniculitis immediately adjacent to the skin were well seen on CT, although less well-delineated on radiographs. Ill-defined increased tracer accumulation was readily identified on bone scintigraphy.

Conclusion: Imaging findings demonstrating extensive fine small vessel vascular calcification within the subcutaneous adipose tissue just deep to the skin with associated skin thickening and panniculitis are highly characteristic of calciphyaxis.

Modality % - Radiography / Fluoroscopy:	50
Modality % - CT:	39
Modality % - MRI:	0
Modality % - US:	0
Modality % - Nuclear Medicine:	10

Radiograph showing the fine small vessel clarifications best seen along the posterior inferior heel.



CT showing the small vascular calcification with mild skin thickening and panniculitis.

Poster #38

EARLY DETECTION OF METASTASES USING WHOLE-BODY MRI FOR INITIAL STAGING AND ROUTINE FOLLOW-UP OF MYXOID LIPOSARCOMA

Thomas Powell, MB,BCh., BAO, FFR(RSCI); Natalia Gorelik, MD; Santhosh Reddy, MBBS, MRCP, FRCR; Robert Turcotte, MD, FCRSC; Krista Goulding, MD, MPH, FRCSC; Sungmi Jung, MD, FRCPC; Thierry Alcindor, MD, MSc
McGill University, Montreal, QC, Canada
(Presented by: Thomas Powell, MB,BCh., BAO, FFR(RSCI), McGill University)

Purpose: To define the role of whole body MRI (WBMRI) for initial staging and routine follow-up of myxoid liposarcoma (MLS).

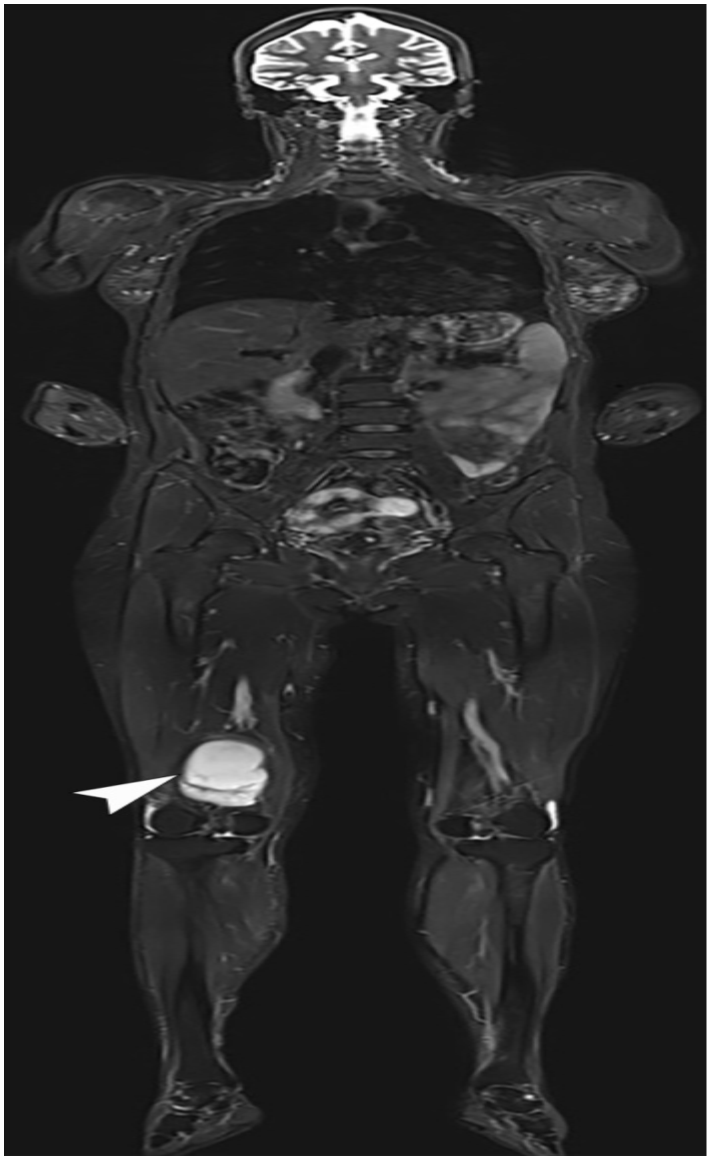
Materials and Methods: A retrospective review of all the patients with MLS who underwent WBMRI for initial staging and routine follow-up at our institution between October 1, 2006 and September 30, 2016 was performed. Patient demographics, clinical presentation, imaging findings, tumor histology and occurrence and location of metastatic disease were recorded. Thirty-three patients who underwent a total of 150 WBMRI examinations were included in the study.

Results: Nine patients (27%) were diagnosed with metastases between 0 and 60 months (mean 17 months) from the histopathological diagnosis of the primary tumor. The initial site of metastatic disease was extrapulmonary in all patients. Only two patients developed pulmonary metastases, which were diagnosed by CT chest 9 and 29 months after the first discovery of extrapulmonary metastases. The first metastasis was diagnosed by WBMRI in 7 patients (78%), by thoracic CT in 1 patient, and by abdominal CT in 1 patient. Eight of nine patients were asymptomatic at the time of diagnosis of the metastases. In 7 patients (78%), WBMRI demonstrated metastases included within the field of view of, but occult on a contemporaneous CT scan.

Conclusion: Our 10-year institutional experience demonstrates that the use of WBMRI for initial staging and routine follow-up of patients with MLS facilitates early detection of extrapulmonary metastases, before the onset of clinical symptoms and pulmonary metastases. WBMRI depicts extrapulmonary metastases that are often occult on CT scans. The current surveillance strategies are insufficient for screening for extrapulmonary MLS metastases.

Reprinted by permission from Springer Customer Service Centre GmbH: Springer Nature. Skeletal Radiology. Early detection of metastases using whole-body MRI for initial staging and routine follow-up of myxoid liposarcoma, Gorelik, N., Reddy, S.M.V., Turcotte, R.E., Goulding, K., Jung, S., Alcindor ,T., Powell, T., © ISS 2017, advance online publication, 23 Dec 2017 https://doi.org/10.1007/s00256-017-2845-9

Modality % - Radiography / Fluoroscopy:	0
Modality % - CT:	15
Modality % - MRI:	80
Modality % - US:	0
Modality % - Nuclear Medicine:	5



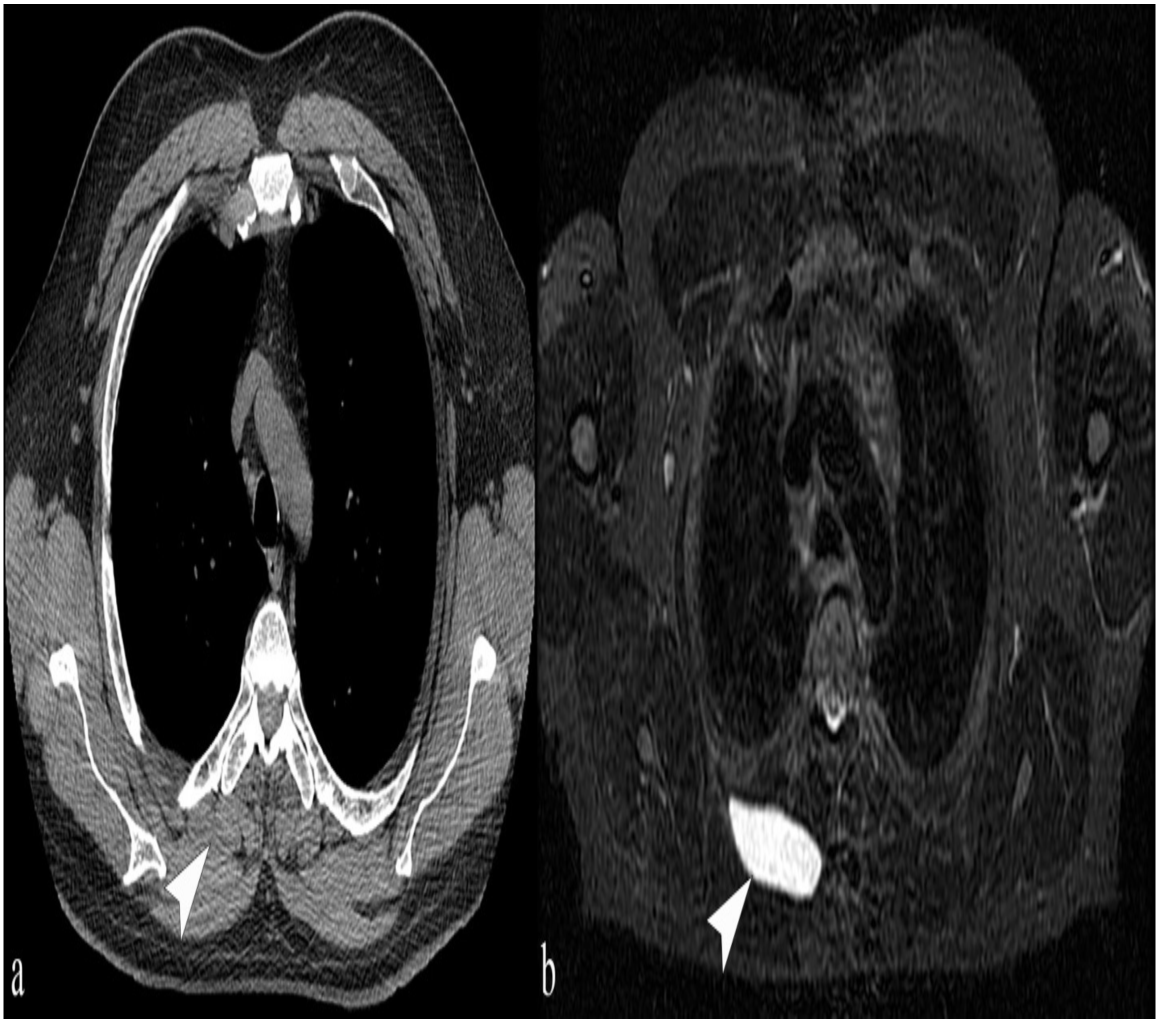


Fig. 1. Example of a staging WBMRI showing a right thigh primary MLS and no metastases.
Fig. 2. Posterior chest wall metastasis occult on CT.

Poster #42

DISTRIBUTION OF FEMORAL SHAFT METASTATSES; IMPLICATIONS FOR PET/CT SCANNING

Michael Mulligan, MD
University of Maryland School of Medicine, Baltimore, MD, USA
(Presented by: Michael Mulligan, MD, University of Maryland School of Medicine)

Purpose: To determine the incidence of metastatic disease below the midshaft level of the femur in cancer patients.

Materials and Methods: IRB approved retrospective review of imaging studies of 137 cancer patients (mean age 62 years) with known involvement of the femur. Location of femoral shaft metastasis was noted as either proximal or distal to midshaft level on all relevant imaging studies. Patients with myeloma were excluded.

Results: Of the 137 patients, 36% had distal femoral shaft metastases. The distal site was the only femoral site in 9%. The distal site was the only area of skeletal involvement in 3%. Metastases were seen from 29 different primary carcinomas or lymphomas, most commonly from breast (25%), prostate (19%) or lung (16%).

Conclusion: More than one third of cancer patients with metastases to the femur may have involvement of the distal femoral shaft. This portion of the femur is not included on typical PET/CT staging studies. PET/CT coverage should be extended to include the distal femoral shafts to avoid missing these important lesions that could result in pathologic fracture.

Modality % - Radiography / Fluoroscopy:	40
Modality % - CT:	10
Modality % - MRI:	10
Modality % - US:	0
Modality % - Nuclear Medicine:	40

Image 1. 69 year old man with new diagnosis of esophageal cancer. Routine PET/CT showed no femoral disease. MRI shows large distal femoral shaft metastasis.

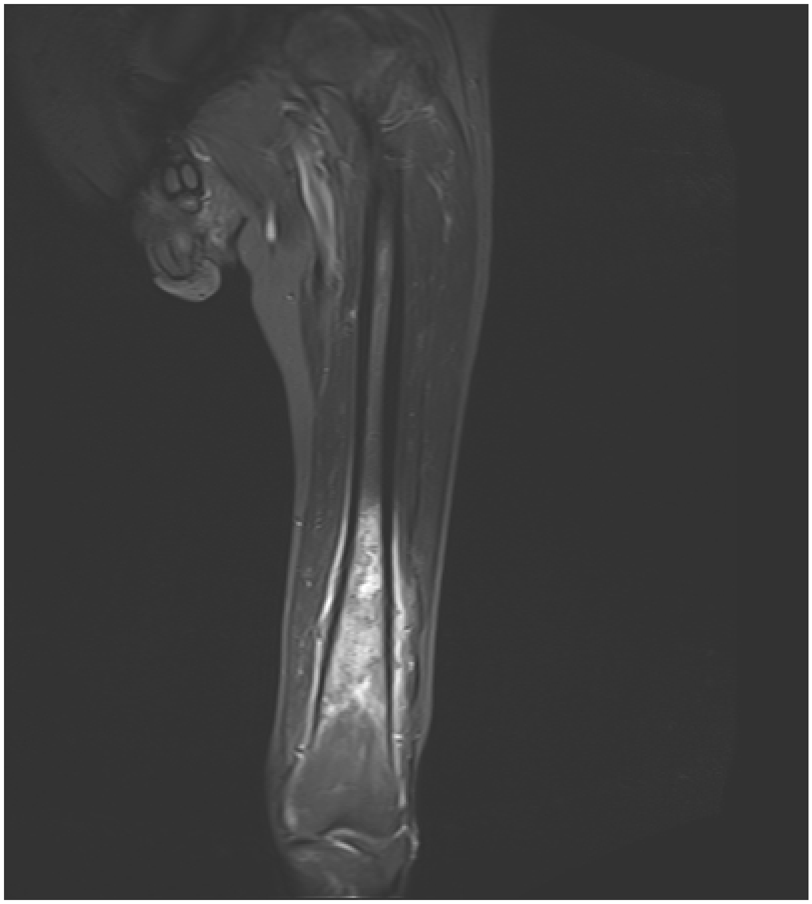


Image 2. Patient treated with extensive hardware fixation 9 days after MRI to prevent pathologic fracture.

Poster #50

GETTING TO YOUR FEET: MR IMAGING OF FOREFOOT PAIN: WHAT THE PRACTICING RADIOLOGIST NEEDS TO KNOW

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(Presented by: Richard Leake, MD, University of Utah Medical Center / SOM)

Purpose: Forefoot pain is a common reason for primary care and emergency department visits with foot and toe injuries accounting for 3.5% of emergency department injury visits according to the 2013 National Hospital Ambulatory Medical Care Survey. While all foot injuries do not warrant MR imaging, forefoot pain is a common indication for MRI. The aim of this exhibit is to aid the practicing radiologist in interpreting conventional forefoot anatomy and common pathology seen on forefoot MR imaging.

Materials and Methods: Educational Goals/Teaching Points:

Upon completion of this exhibit, the reader should be proficient in recognizing normal and abnormal forefoot anatomy, and recognize common traumatic and non-traumatic pathology on MRI.

Results: Outline:

Following review of conventional forefoot anatomy, this exhibit will be organized into two broad categories, including traumatic and non-traumatic pathology. The distinguishing MR imaging features of each entity will be reviewed.

Case based imaging review includes the following topics:

1. Conventional forefoot anatomy
2. Forefoot MR protocol review
3. Case Based imaging review
    1. Traumatic
        1. Fractures
            1. Avulsion
            2. Stress fracture/ stress response
            3. Sesamoid fracture
        2. Plantar plate injury
        3. Freiberg infraction
        4. Ligament disruption
        5. Tendon injury
    2. Non-traumatic:
        1. Joint disorders: osteoarthritis, gout, sesamoiditis, hallux valgus
        2. Infectious: osteomyelitis, septic arthritis
        3. Soft tissue: Morton neuroma, ganglion, plantar fibroma, adventitial bursa

Conclusion: To ensure accurate diagnosis in both the traumatic and non-traumatic setting, the practicing radiologist must have adequate knowledge of forefoot anatomy and sound recognition of pathology to aid the referring clinician and improve patient care.

Modality % - Radiography / Fluoroscopy:	0
Modality % - CT:	0
Modality % - MRI:	100
Modality % - US:	0
Modality % - Nuclear Medicine:	0

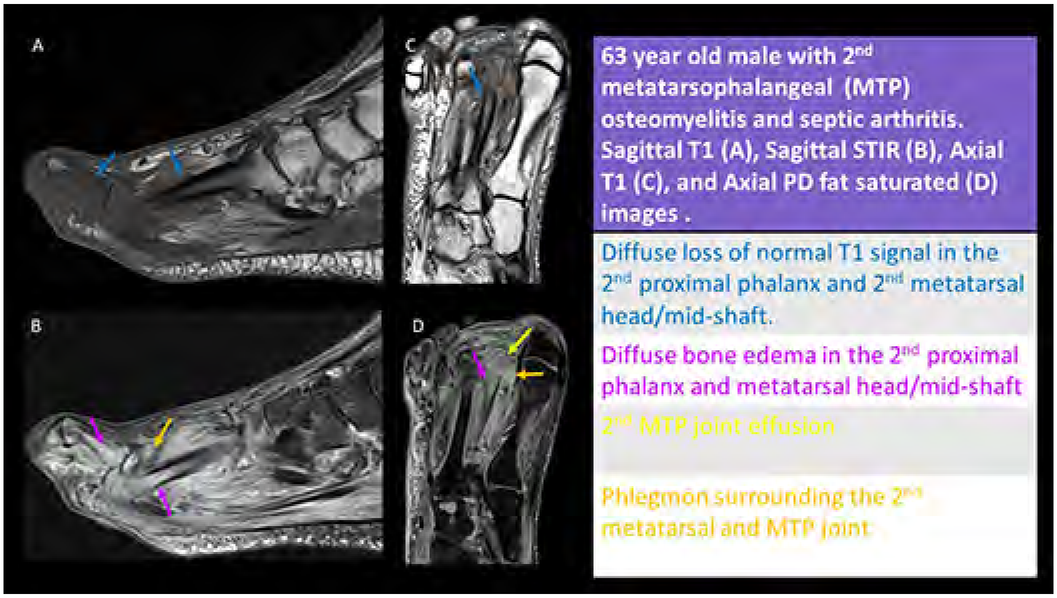

Image 1. 2nd metatarsophalangeal (MTP) osteomyelitis and septic arthritis

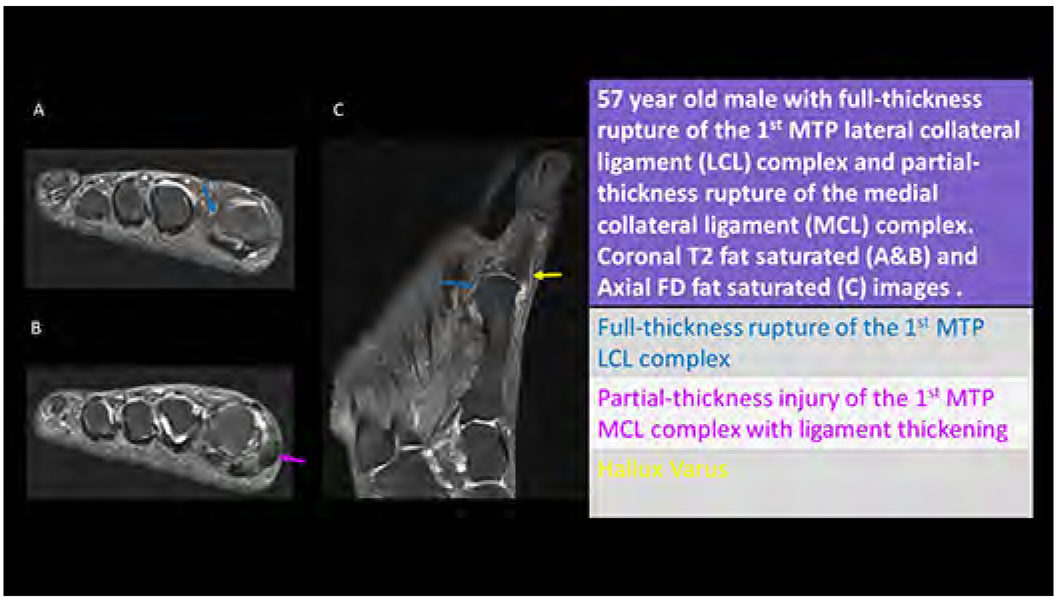

Image 2: full-thickness rupture of the 1st MTP lateral collateral ligament (LCL) complex and partial-thickness rupture of the medial collateral ligament (MCL) complex