PROCEDURE: **MRI ARTHROGRAM RIGHT KNEE**

INDICATION: Surgery August 2016, patient has persistent pain. ACL and MCL repair.

COMPARISON: Preoperative study 10/16/2014. On this study, there is a partial intrasubstance ACL tear greater at the posterior lateral bundle of the intercondylar notch. There was a bipartite patella, although there is some irregularity at the chondral surface.

TECHNIQUE: MRI arthrogram protocol was performed, which includes fat-suppressed T1-weighted scans in all three planes, as well as T1-weighted, proton density, and T2 fat-suppressed sequences. The arthrogram portion is performed and dictated separately.

FINDINGS:

ACL reconstruction: The reconstructed ACL is intact. This is best seen on axial images. There may have been a notchplasty, although the operative report is not available. No evidence of any cystic changes of the interference screws. No evidence of hardware failure. No evidence of iliotibial band friction. No evidence of arthrofibrosis or ligamentization. No evidence of impingement, and the tunnels appear in appropriate alignment. There is no evidence of a pattern of contusion to suggest instability due to ACL insufficiency.

Ligaments: PCL is intact. Ligament of Humphrey visible. Faint ligament of Wrisberg is visible on coronal images but not sagittal images.

The MCL is thickened, with intermediate signal at the femoral insertion. Tibial insertion is preserved. There is some thickening of the fibular collateral ligament. Iliotibial band is normal, without evidence of impingement. Fibular head and syndesmosis are intact.

There is some thickening of the fibular popliteal ligament, arcuate ligament is intact. Popliteal tendon and muscle are preserved. Posterior lateral corner is intact.

Extensor mechanism: There is patellar tendinosis, evidence of postoperative changes of the patellar tendon, but no evidence of acute or high-grade partial tear. There is quadriceps insertional tendinosis and postoperative changes.

The small bipartite portion of the patella has been resected. Tibial tubercle to trochlear groove distance is within limits of normal.

There is a large effusion. No synovial thickening. No definite loose bodies.

Patellofemoral compartment: There is grade II chondromalacia at the lateral patellar facet. There is a Wieberg type II patella. Grade II medial patellar facet chondromalacia. Grade III chondromalacia at the trochlea cartilage sagittal image 8, with extensive fissuring.

Medial compartment: Progressive, moderate narrowing. Multifocal grade III chondromalacia and spurring at the central aspect medial femoral condyle. Subchondral edema and chondral irregularity at the posterior margin medial tibial plateau, with diffuse grade I thinning of the medial compartment cartilage. Subchondral edema at the anterior aspect medial femoral condyle. Given that there has been a partial menisectomy, these likely represent progressive Fairbanks degenerative changes.

Lateral compartment: Moderate narrowing, subchondral edema lateral margin lateral femoral condyle, irregularity and grade II chondromalacia with subchondral edema at the lateral margin of the lateral tibial plateau with grade III chondromalacia. This patient has had a partial menisectomy, and there is multifocal grade II chondromalacia at the central aspect of the lateral tibial plateau. These are likely post menisectomy Fairbanks degenerative changes and have progressed.

Menisci: Medial meniscus is truncated and there likely has been a partial meniscectomy. The anterior horn is subluxed, with grade III signal. The body is also subluxed, and truncated. There is some fraying along the inner margin. Posterior horn is thinned, with marginal fraying. There is grade III signal in the posterior horn but without a discrete tear. The central root shows grade III signal, but is intact.

Lateral meniscus is truncated, particularly the posterior horn. This is consistent with partial meniscectomy. Anterior horn is intact. There is scuffing along the margin of the body lateral meniscus, which is truncated. The posterior horn lateral meniscus is severely truncated, sagittal image 7. There is tearing along the periphery of the posterior central root of the lateral meniscus. It is possible there is a bucket-handle tear due to the difference in diameter of the posterior horn and central root, but this is not certain.

IMPRESSION:

1. Progressive Fairbanks degenerative changes of the medial compartment with multifocal chondromalacia. There has been a partial medial meniscectomy and some fraying along the resected margins, but no evidence of any discrete repeat tear.

2. Partial lateral meniscectomy with progressive degenerative change and chondral loss. The configuration and severely truncated posterior horn suggests there may have been an additional bucket-handle tear although this is not convincingly demonstrated.

3. ACL reconstruction is intact. No evidence of any associated changes or abnormality.

4. Resection of the bipartite patella. There is tendinosis and moderate patellofemoral arthrosis.

5. Overall, these findings show marked progressive degenerative arthritis throughout the compartments.

PROCEDURE: **MRI ARTHROGRAM OF LEFT SHOULDER and X-RAY ARTHROGRAM LEFT SHOULDER INJECTION**

INDICATION: Left shoulder pain, acute injury, three to four months.

COMPARISON: None

TECHNIQUE:

After discussion of risks, benefits and alternatives, informed consent was given. The patient's LEFT arm was prepped and draped in the usual sterile manner. Local anesthetic was applied. A test dose of 3 cc was administered to ensure that the 25-gauge 1-1/2-inch needle was within the bursa. Then, 9 cc of MRI mixture was injected without incident. This mixture was prepared with 10 mL Omnipaque-180, 10 mL sodium chloride solution, and 0.05 mL Gadavist.

Patient tolerated the procedure well without immediate complication. Needle was withdrawn; there was immediate hemostasis.

Fluoroscopic Time: 0:53 seconds

The patient then went to MRI, where standard post MRI arthrogram protocol was performed.

FINDINGS:

Tendons:
There is a full-thickness supraspinatus tendon tear with retraction to the AC joint. There is a full-thickness infraspinatus tear with retraction to near the AC joint. There is infraspinatus muscle edema, and infraspinatus and supraspinatus mild muscular atrophy. The teres minor is intact. There is a subscapularis partial intrasubstance tear extending to the insertion.

Labrum: There is a SLAP lesion. There is a superior labral tear extending from the anterior to the posterior aspect of the glenoid margin. There is a 4 mm paralabral cyst, but this does not extend to the spinoglenoid notch. This tearing extends to the superior margin of the posterior labrum. There is fraying of the posterior labrum, and truncation along the margin of the posterior labrum.

The anterior labrum is truncated as well, including anterior superior but also the rest of the anterior labrum. There is some infolding along the inferior and posterior labrum, within the joint image 19 series 3. There is a tear along the posterior and inferior labrum series 4 image 17 and axial image 19.

Biceps labral complex: Long head biceps tendon and biceps labral complex are completely torn. A portion of the long head biceps tendon is visible in the proximal bicipital groove on axial image 16. This is flattened along the margin of the growth, with extensive tenosynovitis. This is likely a remnant of a full-thickness proximal tear with some retraction.

Glenoid: Moderate glenohumeral joint arthrosis. There is some fissuring and grade I chondromalacia at the posterior glenoid, as well as some subchondral cystic changes at the inferior and posterior glenoid. There is an additional fold of joint capsule or labrum in this region, likely a torn and loose labrum. The humeral head shows moderate degenerative change but no osteochondral defect.

Joint capsule: There is thinning and enlargement of the axillary recess. There is thinning along the axillary portion, midportion, and humeral insertion but no evidence of acute injury. This is an enlarged patulous capsule however, suggesting chronic injury. No adhesive capsulitis.

AC joint: There is widening and irregularity of the AC joint with edema in the AC joint. There is no offset. The acromioclavicular ligament is thickened and likely chronically partially torn. This is likely a grade I shoulder separation. Fluid tracks proximally to the coracoclavicular ligament. Sagittal image 13 and coronal images show a partial tear of the trapezoid component of the coracoclavicular ligament. There is also some partial tearing and attenuation of the conoid portion. No full-thickness tear however. This is likely a grade II shoulder separation but not a complete or grade III separation.

Visible axilla shows no evidence of any mass. Bone marrow signal shows some erosions at the greater tuberosity, erosions and cortical irregularity at the AC joint, but not an erosive arthritis.

IMPRESSION:

1. Full-thickness tear of left supraspinatus tendon with retraction to the AC joint. There is minimal muscle atrophy at best.

2. Full-thickness tear infraspinatus tendon, with muscular edema and tendon retraction.

3. Partial tear of subscapularis tendon.

4. SLAP lesion, extensive labral tear including biceps labral complex with complete tear, and a tear including posterior superior labrum as well as the posterior inferior labrum. Truncation of the anterior superior labrum but without evidence of a discrete tear.

5. Moderate glenohumeral joint arthrosis.

6. Severe AC joint arthrosis with widening and irregular margins, partial tear of both portions of the coracoclavicular ligament, grade II shoulder separation. Further testing with weightbearing radiographs may be helpful to confirm this.

7. Enlarged, patulous joint capsule.

PROCEDURE: **MRI Brain With and Without Contrast**

INDICATION: Embolic stroke. Bilateral hand, finger loss. 3 months.

COMPARISON: None

TECHNIQUE: Multiplanar MRI was performed through the brain without contrast. 8 cc Gadavist was injected. Creatinine is 1.3. GFR is 51.

FINDINGS:

The RIGHT vertebral artery is not visible. There is either occluded or hypoplastic. There is a dominant LEFT vertebral artery which is patent. Basilar artery is also patent. This is based on post contrasted scans and axial T2-weighted scans. Internal cerebral arteries show flow voids suggesting patency. Internal jugular veins are patent, but with a very hypoplastic RIGHT IJ.

Diffusion imaging is negative for acute infarction. There is minimal periventricular white matter hyperintensity, a few scattered deep white matter supratentorial lesions. Minimal pontine hyperintensity. There is a small focus of LEFT superior occipital cortical hyperintensity, axial FLAIR image 19. No enhancement nor diffusion restriction, likely a small focus of chronic cortical infarct. There is a small amount of encephalomalacia.

Mild cortical atrophy and cerebellar atrophy. No preferential brainstem atrophy. Ventricular is not enlarged. There is superior cervical spondylosis greatest C4-5 and facet arthropathy although no definite cord compression. There is some flattening of the thecal sac at C4-5. There is severe facet arthropathy on the LEFT at C1-2.

Parotid glands are normal. Calvarial bone marrow is normal.

Extensive hemosiderin deposition the basal ganglia is likely age-appropriate. There is a single punctate focus of hemosiderin deposition in the cerebellar vermis, image 22 series 6. There is another ill-defined area of hemosiderin deposition in the RIGHT para midline frontal lobe, and there is encephalomalacia in this region, likely sequelae of a small ACA territory infarct. Series 10 image 20.

Overall myelination pattern is normal. There are scattered surgeries, orbits are grossly normal. Lacrimal glands and extraocular muscles are normal. There is leftward nasal septal curvature and

lobular circumferential LEFT maxillary sinusitis with some lobular RIGHT maxillary mucosal thickening, 17 mm mucous retention cyst or polyp. There is associated or proteinaceous secretions in the inferior RIGHT maxillary sinus. Mild ethmoid mucosal thickening.

Chronic mastoid loss of aeration, no mastoid fluid. Nasopharynx shows no invasive mass. Mild to moderate TMJ arthrosis. IACs appear normal.

There is a 5 mm lacunar infarct LEFT cerebellar hemisphere image 8, series 11. There is some subtle irregularity, possibly a small lacunar infarct inferior RIGHT cerebellar hemisphere axial image 9.

There is no abnormal parenchymal enhancement. No meningeal or dural enhancement. Venous sinuses enhance normally.

IMPRESSION:

1. Small LEFT occipital cortical infarct. Small RIGHT anterior frontal Para Midline cortical and subcortical infarct. Left cerebellar small lacunar infarct. These are chronic findings.

2. No acute infarction. No large territorial infarction. No acute hemorrhage, no subdural hematoma. No mass effect or midline shift.

3. There is minimal periventricular white matter disease at best. There is mild pontine white matter hyperintensity, likely small vessel ischemic disease. This patient has small cortical infarcts and lacunar infarcts in the setting of minimal white matter disease for the patient's age.

4. Small focus of hemosiderin deposition in the cerebellar vermis. No other areas of chronic hemorrhage.

5. Absent or nonvisualized RIGHT vertebral artery. Dominant LEFT vertebral artery and basilar artery is patent. Right vertebral artery to be chronically occluded or hypoplastic.

6. Right maxillary lobular sinusitis with inspissated secretions. Leftward nasal septal curvature. Left maxillary circumferential sinusitis. No mastoid fluid.

7. Dr. Bard would be happy to discuss these findings with the referring clinician at your convenience.

PROCEDURE: MRI CERVICAL SPINE WITH AND WITHOUT CONTRAST; MRI THORACIC SPINE WITH AND WITHOUT CONTRAST

INDICATION: Myelopathy. No reported history of trauma. Initial encounter.

COMPARISON: None.

TECHNIQUE: Standard protocol through the cervical spine with and without contrast. Standard protocol through the thoracic spine with and without contrast. Creatinine is 0.7. 7.5 cc Gadavist was utilized. 0 cc was discarded.

FINDINGS:

In summary, there is a 32 mm mass within the conus medullaris, an intramedullary mass with diffuse enhancement and thickening and enhancement of the nerve roots.

Cervical spine is in anatomic alignment. Bone marrow signal is normal. Prevertebral and paraspinous soft tissues are normal. Cerebellar tonsils are within limits of normal. No cord lesion is seen.

C1-2: Mild degenerative change.

C2-3: Minimal spondylosis and mild facet arthropathy.

C3-4: Mild spondylosis, moderate facet arthropathy greater on the LEFT moderate LEFT and mild RIGHT neural foraminal narrowing.

C4-5: Mild spondylosis, mild facet arthropathy, mild neural foraminal narrowing. No canal stenosis.

C5-6: Moderate spondylosis. Endplate edema. 3 mm central and LEFT paracentral protrusion and osteophyte. Moderate RIGHT facet arthropathy, mild on the LEFT. Moderate to severe LEFT, mild to moderate RIGHT neural foraminal narrowing. There is ligamentum flavum thickening or infolding, AP diameter is 8 mm.

C6-7: Moderate spondylosis. 3 mm LEFT paracentral protrusion, extending superiorly and flattening the thecal sac. AP diameter is 9 mm. Slight flattening of the LEFT side of the thecal sac. Mild to moderate facet arthropathy and neural foramina are patent. Flattening of the thecal sac, no canal stenosis.

C7-T1: Mild spondylosis and moderate facet disease.

T1-T2: Mild spondylosis.

T2-3: Minimal spondylosis and mild to moderate facet arthropathy greater on the LEFT.

On post-contrasted scans, there is no abnormal enhancement within the superior thoracic spine nor of the cervical spine. Major salivary glands appear normal.

MR thoracic spine with and without contrast: There is a mild thoracic kyphosis and multilevel moderate spondylosis. There multiple Schmorl's nodes throughout the thoracic spine, and ligamentum flavum thickening greatest at T2-3. There is a hemangioma at T1.

There is facet arthropathy greatest at T2-3 followed by T3-4. There also is facet arthropathy and hypertrophy at T9-10 and T10-11, and at T12. The conus ends at L1-2. Visible thoracic aorta is ectatic but there is no aneurysm. Visible adrenals appear normal.

There are multilevel endplate Schmorl's nodes and multilevel mild spondylosis.

There is a cord lesion beginning at T6-7. There is central hyperintensity within the cord measuring 3.4 mm, and the central margin expands until it measures 5 x 5 cm. This 5 x 5 cm central expansion of the cord extends from T6-7 through the conus at L1-2. There is some expansion of the cord.

There is an enhancing mass within the cord at L1. This measures 32 x 11 mm CC and AP dimensions, 7 mm in transverse dimensions. This is at the conus. No other abnormal enhancing lesion in the cord is seen.

There is some enhancement of the nerve roots distally and some mild enhancement along anterior and posterior margins of the thoracic spine, which might represent some neuritis or vessels.

There is thickening of the nerve roots in the lumbar spine extending from the cauda equina distally.

There is grade 1 anterolisthesis with pars defects at L4, and canal stenosis at L5-S1 and L3-4.

IMPRESSION:

1. Enhancing intramedullary, conus medullaris mass, 32 x 11 x 7 mm, at the pelvis, at L1. There is no evidence of calcifications, no abnormal flow voids, mild enhancement proximal to this, and a syrinx extending proximally to T7. This is mildly hyperintense on T2-weighted scans.

2. There is distal enhancement and thickening of the nerve roots.

3. There is multilevel spondylosis and facet arthropathy thoracic spine, but the main findings are likely within the cord. No cord compression.

4. Post-contrasted scans through the cervical spine are limited by artifact, there is no mass or enhancement or mass, however.

5. Primary considerations in this region are ependymoma, neurofibroma, or metastatic disease. The presence of enhancing thickened nerve roots, without any evidence of flow voids or T2 hyperintensity suggests possible metastatic disease. Lymphoma would be darker on T2-weighted scans in general. Therefore, there can be unusual primitive neuroectodermal tumor (PNET) or a small, less likely primary neoplasm. Metastatic disease is considered very likely.

6. MRI of the brain is recommended with and without contrast including fat-suppressed post-contrasted scans. Lumbar puncture may be necessary depending on results of the brain. Review of the clinical notes shows no reported history of malignancy. MRI lumbar spine is dictated separately.

PROCEDURE: MRI CERVICAL SPINE WITHOUT CONTRAST

INDICATION: Pain. Laminectomy at L5 in 1992. Cholecystectomy. No prior cervical surgery. Right shoulder and arm pain. Neck pain. There is a history of trauma, 3 1/2 weeks. Cervical disc disease C6-7 and C5-6.

COMPARISON: None.

TECHNIQUE: Standard protocol.

FINDINGS:

There is straightening and reversal of the normal lordosis, greatest at C5-6. Bone marrow signal is normal. There is paraspinous muscle edema on the RIGHT, sagittal series 6 images 8 through 14. There is a small amount of edema at C4 spinous process, image 8 series 6, and also at C6 spinous process, sagittal image 8. No definite acute avulsion fractures are seen, the injury was 3 1/2 weeks ago, but this could represent nondisplaced fracture along with paraspinous muscle injury and interspinous ligament injury. No evidence of acute injury to the nuchal ligament.

Cerebellar tonsils are ectopic. The LEFT cerebellar tonsil is ectopic by 4 mm, the RIGHT is ectatic by 2 mm. Technically, this is not a Chiari malformation, but reviewing sagittal images 5 and 6, this can be associated at times with symptoms. The rest of the visible posterior fossa is grossly normal.

The pituitary is not enlarged. Distal vertebral arteries and basilar artery show flow voids suggesting patency.

Reviewing the prevertebral soft tissues, there is slight thickening of the prevertebral soft tissues anterior to C2, measuring 5 mm. There is some subtle prevertebral edema on the sagittal STIR sequence. There is also some edema ventral to C5-6. This may represent sequela of ligament injury given the history of acute trauma.

There also is a small amount of endplate edema anteriorly at C6-7. No vertebral body fractures are seen.

C1-2: There is facet arthropathy at C0-1, mild degeneration at the anterior arch of C1 and C2. No canal stenosis.

C2-3: Minimal spondylosis, 1 mm subligamentous central protrusion. There is mild facet arthropathy greater on the LEFT, with some LEFT-sided facet hypertrophy. No canal stenosis. Neural foramina are patent.

C3-4: Mild spondylosis, 1 mm subligamentous central protrusion. There is mild to moderate LEFT facet arthropathy, with a small facet synovial cyst outside the canal on axial image 8. No canal stenosis or cord compression.

C4-5: Mild spondylosis. 1 mm disc osteophyte complex. Moderate LEFT-sided facet arthropathy. There is facet hypertrophy and edema and minimal RIGHT with mild LEFT neural foraminal narrowing. AP diameter is 11 mm. No canal stenosis.

C5-6: Reversal of the normal lordosis. Broad 2 mm disc osteophyte complex, mild facet arthropathy. The spondylosis is greater on the LEFT. Mild to moderate LEFT neural foraminal narrowing, mild RIGHT neural foraminal narrowing. AP diameter is 10 mm.

C6-7: Moderate spondylosis. 2 mm protrusion and osteophyte. This is greater on the RIGHT. Moderately severe RIGHT neural foraminal narrowing with nerve root impingement. Minimal LEFT neural foraminal narrowing. Mild facet disease. No cord compression or canal stenosis.

C7-T1: Mild spondylosis. Mild facet disease. No compression.

T1-T2: Mild spondylosis, 1 to 2 mm osteophyte, LEFT-sided nerve sheath cyst along with T2-3 on the LEFT. No canal stenosis. Neural foramina are patent.

IMPRESSION:

1. Moderately severe RIGHT neural foraminal narrowing at C6-7. There is RIGHT-sided nerve root impingement in the neural foramen.

2. Straightening and reversal of the normal lordosis.

3. Cerebellar tonsillar ectopia, greater on the LEFT measuring 4 mm. This is borderline, does not meet the criteria for a Chiari malformation, there is minimal at best tonsillar notching. However, this can be associated with some patient symptoms.

4. Right-sided paraspinous muscle edema. There is some edema within the spinous processes at C4 and C6, as well as C7 and interspinous ligament edema. This patient reportedly had trauma 3 1/2 weeks ago and these findings could be associated with trauma. Comparison with priors if available would be helpful.

5. There is a small amount of prevertebral soft tissue thickening and edema as well, at C2 and also at C5-6. Therefore, this patient may have anterior and posterior ligamentous injury. This is in addition to the muscular injury.

6. Multilevel facet arthropathy and spondylosis at other levels, described above. The greatest RIGHT neural foraminal narrowing, however, is at C6-7, which corresponds to the patient's reported current symptoms.

PROCEDURE: MRI CERVICAL SPINE WITHOUT CONTRAST

INDICATION: Neck pain, LEFT shoulder pain, dizziness and radiation. Pain and paresthesias. Scoliosis.

COMPARISON: Flexion-extension radiographs performed today, and 1/31/2012.

TECHNIQUE: Sagittal T1, T2, and STIR, axial GRE. No axial T2 nor oblique coronals or oblique sagittals.

FINDINGS:

Reviewing prior studies, there is evidence of prior thoracic surgery, likely fusion. The radiographs show reversal of the normal lordosis with spondylosis greatest at C5-6, slight anterolisthesis C4-5, spondylosis at C6-7. These findings have progressed.

There is straightening of the normal lordosis. Cerebellar tonsils are within limits of normal. Pituitary is not covered. Minimal sphenoid sinusitis. Distal vertebral arteries show flow voids suggesting patency but the basilar artery is small in caliber, although it does show a flow void.

Paraspinous soft tissues are normal. Prevertebral soft tissues are normal. The vertebral arteries do appear small in caliber on the axial GRE images.

C1-2: Severe LEFT-sided facet arthropathy and hypertrophy, sagittal image 5. Moderate degeneration at the anterior arch of C1 and C2.

C2-3: Mild spondylosis. Severe facet arthropathy greater on the RIGHT, 1 mm subligamentous central protrusion. No compression.

C3-4: Moderate spondylosis. Osteophytic spurring greater on the LEFT, severe LEFT and moderate RIGHT facet arthropathy. Moderate LEFT neural foraminal narrowing, AP diameter is 10 mm.

C4-5: Moderate spondylosis. There is osteophytic spurring, moderate facet arthropathy greater on the RIGHT. Moderate bilateral neural foraminal narrowing, slightly greater on the RIGHT. No definite cord lesion. There is signal within the cord on the sagittal STIR and T1-weighted scans, axial GRE sequences are not ideal for evaluating the cord but no definite lesion is seen.

C5-6: Moderate spondylosis, greater on the LEFT. Moderate facet arthropathy. Moderate LEFT and mild RIGHT neural foraminal narrowing. No cord compression.

C6-7: Moderate spondylosis. 2 mm central protrusion, osteophytic spurring, mild neural foraminal narrowing. There is flattening of the thecal sac, AP diameter is 9 mm. No cord compression.

C7-T1: Mild spondylosis and mild to moderate RIGHT facet arthropathy. Mild RIGHT neural foraminal narrowing.

T1-T2:Mild spondylosis and facet disease, minimal RIGHT neural foraminal narrowing.

T2-3: Minimal spondylosis and mild facet disease.

On coronal reconstructions, there is slight rightward cervical curvature which could be positional or a true finding. Visible thyroid appears normal.

Also note, there is a large signal void on the LEFT side of the LEFT cerebellar hemisphere sagittal image 2 series 6. There is some hemosiderin staining, and some branching vessels. This may represent a venous vascular malformation at the LEFT cerebellar hemisphere. Please review the sagittal images 3 and 2 to evaluate this lesion. Consider brain MRI with and without contrast to evaluate this.

IMPRESSION:

1. This patient has LEFT radiculopathy. There is severe LEFT facet arthropathy at C1-2, severe LEFT facet arthropathy with edema at C3-4, and multilevel spondylosis. Neural foraminal narrowing on the LEFT is greatest at C3-4 followed by C4-5 and C5-6.

2. Borderline canal stenosis at C4-5, no cord compression.

3. There is some signal within the cord, linear signal that may suggest syrinx. However, this is not seen on all sequences; the axial GRE sequence does not evaluate the cord very well but no syrinx is seen. This likely represents some artifact in the cord.

4. Cervical curvature. Cerebellar tonsils are within limits of normal.

5. Small posterior circulation. Small vertebral arteries and small basilar artery.

6. Enlarged vessel with branching and possibly hemosiderin deposition LEFT cerebellar hemisphere, possible venous vascular malformation with hemosiderin staining. This might be associated with some of patient's symptoms of dizziness, consider brain MRI without and with contrast. Sagittal images 2 and 3.

PROCEDURE: MRI CERVICAL SPINE WITHOUT CONTRAST

INDICATION: Chronic, sharp, intermittent neck pain and LEFT shoulder pain. Injury in the 1970s, surgery in the 1970s, MVA and neck fracture 1970. No malignancy.

COMPARISON: None.

TECHNIQUE: Standard protocol.

FINDINGS:

There is a 7 degrees leftward cervical curvature. There is rightward superior thoracic curvature. There is some straightening of the normal lordosis. Bone marrow signal is normal. Cerebellar tonsils are within limits of normal. No cord lesion is seen. Distal vertebral arteries show a dominant LEFT vertebral artery, which is enlarged and ectatic, and a small, hypoplastic or absent RIGHT vertebral artery. On axial sequences, the RIGHT vertebral artery flow void is not visible with certainty and may be absent or made from collaterals.

Prevertebral soft tissues are normal. Paraspinous soft tissues are normal.

C1-2: Moderate degenerative change, there is irregularity at the tip of the odontoid process, possibly sequelae of a fracture, no evidence of acute fracture. No malalignment at this time. There is some posterior soft tissue thickening at the odontoid but no canal stenosis or cord compression.

C2-3: There is loss of the RIGHT side disc space suggesting fusion. No compression. Loss of the LEFT side facet joint space, sagittal image 4 and also on the RIGHT, suggesting fusion. No compression.

C3-4: Severe spondylosis. There is osteophytic spurring and minimal anterolisthesis. Severe facet arthropathy, bilateral greater on the RIGHT. Severe RIGHT and mild to moderate LEFT neural foraminal narrowing. There is thickening of the ligamentum flavum and canal stenosis to 7 mm. There is cord compression, no evidence of any definite cord edema. No syrinx.

C4-5: Severe RIGHT-sided facet arthropathy and hypertrophy. Mild spondylosis. Severe RIGHT and mild LEFT neural foraminal narrowing. Right side ligamentum flavum thickening. AP diameter is 10 mm. No cord compression.

C5-6: Moderate spondylosis. Osteophytic spurring greater on the LEFT. This measures 3 mm. Moderate facet arthropathy. There is LEFT-sided canal stenosis measuring 8 mm, severe LEFT and moderate to severe RIGHT neural foraminal narrowing. No cord edema.

C6-7: Moderate spondylosis. Osteophytic spurring, facet arthropathy. AP diameter is 9 mm. Mild to moderate RIGHT and moderate LEFT neural foraminal narrowing. No cord compression.

C7-T1: Grade I anterolisthesis. Moderate spondylosis greater on the LEFT. Severe facet arthropathy. There is ligamentum flavum thickening or infolding greater on the LEFT. Mild LEFT neural foraminal narrowing, mild RIGHT neural foraminal narrowing. No cord compression.

T1-T2:Moderate spondylosis with endplate Schmorl's lobe. Moderate facet arthropathy. Mild to moderate LEFT, mild RIGHT neural foraminal narrowing.

T2-3: Moderate spondylosis, greater on the LEFT. Moderate facet disease, mild LEFT and mild-to-moderate RIGHT neural foraminal narrowing. No canal stenosis.

IMPRESSION:

1. Cord compression and canal stenosis most severe at C3-4. Severe facet arthropathy. No evidence of cord edema nor syrinx.

2. Fusion at C2-3. Facets and disc fusion. This is likely from prior surgery.

3. Degenerative changes at C1-2, possibly from previous fracture. There is no evidence of any current canal stenosis. Radiographs or CT would be helpful to evaluate for instability at this level but there is no evidence at this time of instability.

4. Multilevel canal stenosis greatest at C3-4 but also C4-5, C5-6 and C6-7. No evidence of cord edema nor syrinx.

5. Multilevel severe facet arthropathy, most severe on the RIGHT at C3-4 and C4-5 but also on the RIGHT at C5-6, and on the LEFT at C3-4. Multilevel severe thoracic facet arthropathy.

6. Leftward cervical scoliosis.

7. Dominant LEFT vertebral artery.

8. Right vertebral artery is either very small or hypoplastic.

Priors would be helpful.

PROCEDURE: MRI CERVICAL SPINE WITHOUT CONTRAST

INDICATION: Neck and LEFT arm pain.

COMPARISON: None.

TECHNIQUE: Standard protocol. There is some limitation by motion and some sequences are repeated.

FINDINGS:

There is leftward cervical curvature. Bone marrow signal is normal. Prevertebral and paraspinous soft tissues are normal. Cerebellar tonsils are within limits of normal. Distal vertebral arteries show flow voids suggesting patency. Pituitary is not enlarged.

There is some slight prominence of the central canal, no definite syrinx is seen nor cord lesion, however.

C1-2: Mild degeneration.

C2-3: Mild spondylosis and facet disease.

C3-4: Mild spondylosis, mild LEFT neural foraminal narrowing.

C4-5: Mild RIGHT neural foraminal narrowing, mild spondylosis.

C5-6: There is a large 10 mm LEFT paracentral protrusion. This protrusion extends posteriorly but also inferiorly, and shows intermediate signal on T1-weighted scans, intermediate signal, and mixture of hyperintense and peripheral hypointense signal on T2-weighted scans, and shows some mild hyperintensity centrally on the STIR sequence. This is likely an acute herniation.

There is flattening of the LEFT side thecal sac at C5-6 and C6, severe LEFT neural foraminal narrowing and nerve impingement at the origin of the LEFT side nerve root. There is no cord compression.

C6-7: Mild spondylosis, but the large LEFT paracentral herniation at C5-6 extends inferiorly, and nearly extends to the LEFT neural foramen at C6-7.

C7-T1: Normal.

T1-2:Normal.

T2-3: Normal.

There is some limitation by motion artifact.

IMPRESSION:

1. There is a large 10 mm LEFT paracentral protrusion at C5-6. This causes thecal sac effacement and extends inferiorly, with inferior extrusion, herniation.

2. There is impingement on the LEFT side of the cord at C5-6 and at C6-7. This is due to the large herniation which is likely acute.

3. There is RIGHT neural foraminal narrowing at C4-5 and C5-6, and mild LEFT neural foraminal narrowing at C3-4.

4. Leftward cervical curvature.

PROCEDURE: X-RAY CERVICAL SPINE (FIVE VIEWS) and MRI CERVICAL SPINE WITHOUT CONTRAST

INDICATION: Cervicalgia, M54.2. Right neck/head pains x 2 weeks. No injury. Prior surgery 15 years ago.

TECHNIQUE: Flexion and extension views along with standard views. Five views total for the radiograph. Standard protocol for the MRI cervical spine.

CERVICAL SPINE RADIOGRAPHS:

FINDINGS: Clinical notes are reviewed. Cervical surgery by Dr. Wheeler in 2002. Lumbar surgery. MRI cervical spine performed at Monticello 6/8/2017 shows: Moderately severe bilateral foraminal stenosis C7-T1, RIGHT greater than LEFT, and C3-4 severe LEFT foraminal stenosis with compression of exiting LEFT nerve root. Patient has RIGHT neck pain at this time.

There is a fixation plate and screws with fusion at C4-5, C5-6, and C6-7. There is some lucency at C5 and C6 surrounding the pedicle screws. No hardware fracture can be seen. C7 is limited on this study.

Cervicothoracic junction is not visible, even with swimmer's view. There is severe facet arthropathy C2-3 and C3-4. No evidence of instability with flexion or extension, although there is limited range of motion.

There is facet arthropathy, sclerosis and hypertrophy at C7-T1.

Visible apices are clear. Sella is not enlarged. Visible mastoids are clear. Prevertebral soft tissues are normal. Chronic avulsed bone fragment posterior to C5.

Severe degenerative change anterior arch of C1 and C2. No evidence of instability.

IMPRESSION:

1. ACDF C4-5, C5-6, C6-7, no evidence of hardware fracture but there is some lucency at C5 and C6 pedicle screws. Prior study comparison would be helpful.

2. Severe facet arthropathy C2-3 and C3-4. Facet arthropathy C7-T1. C7-T1 is limited on lateral views.

3. No evidence of instability with flexion or extension. However, there is some limitation by range of motion.

MRI CERVICAL SPINE WITHOUT CONTRAST:

FINDINGS: No priors are available. There is straightening of the normal lordosis, probably from surgery.

Cerebellar tonsils are within limits of normal. The basilar artery shows a flow void. The distal LEFT vertebral artery shows a flow void but not the RIGHT vertebral artery. The RIGHT vertebral artery flow-void is absent in the transverse foramen and this is either hypoplastic or occluded. The LEFT vertebral artery is dominant and patent. CCAs and ICAs are tortuous but do show flow voids, and although not definite there is no evidence to suggest ICA stenosis.

There is canal stenosis measuring 8.5 mm at C3-4, slight flattening of the cord but no edema. There is canal stenosis at C7-T1 measuring 8 mm, no evidence of cord edema. No syrinx. There is mild ethmoid mucosal thickening.

Paraspinous soft tissues show no evidence of any acute ligament injury, nor paraspinous muscle edema. Prevertebral soft tissues appear normal.

Skull base and C1: Severe facet arthropathy. There is facet hypertrophy, no evidence of canal stenosis.

C1-2: Severe degeneration with edema but greater sclerosis at the anterior arch of C1 and C2. There are erosions, and there is soft tissue hypertrophy and thickening posterior to the odontoid. There is also irregularity and soft tissue at the tip of the odontoid with some edema and erosions. Consider an erosive arthritis or possibly calcium pyrophosphate deposition disease, and there is flattening of the thecal sac but no cord compression. There is severe facet arthropathy.

C2-3: Moderate spondylosis greater on the RIGHT. Severe facet arthropathy and hypertrophy on the RIGHT. Moderate LEFT facet disease. There is ligamentum flavum infolding. AP diameter is 10 mm. Moderately severe RIGHT neural foraminal narrowing with nerve root impingement. Mild LEFT neural foraminal narrowing.

C3-4: Moderate spondylosis. This is greater on the LEFT. Severe LEFT facet arthropathy. Moderately severe RIGHT-sided facet arthropathy. Canal stenosis measuring 8.5 mm. Slight flattening of the cord but no edema. Moderate RIGHT neural foraminal narrowing, severe LEFT neural foraminal narrowing. There is ligamentum flavum infolding.

C4-5: ACDF. Minimal LEFT neural foraminal narrowing. No canal stenosis.

C5-6: ACDF. This is also solid. No compression.

C6-7: ACDF. There is mild bilateral neural foraminal narrowing, fusion appears preserved. The C7 screws were not well visualized on the radiographs.

C7-T1: 3 mm anterolisthesis. Moderate spondylosis. Severe facet arthropathy and hypertrophy, greater on the RIGHT. There is some irregularity at the RIGHT side facet and lamina, and this

may represent either severe facet arthropathy or possibly a healed fracture deformity. There is ligamentum flavum infolding. AP diameter is 8 mm and there is slight contact of the cord. No cord edema. Moderate LEFT neural foraminal narrowing. Severe RIGHT neural foraminal narrowing.

T1-2: Moderate spondylosis, moderate facet arthropathy. Mild to moderate LEFT, moderate RIGHT neural foraminal narrowing.

T2-3: Severe spondylosis, partially cut off. However, there is uncovertebral osteophyte formation bilaterally greater on the LEFT. There is facet arthropathy. Moderately severe LEFT, moderately severe RIGHT neural foraminal narrowing.

IMPRESSION:

1. This patient has RIGHT-sided symptoms. The most severe RIGHT neural foraminal narrowing is at C7-T1, followed by C2-3 disc space. Canal stenosis with slight cord compression C7-T1 followed by C3-4. No cord edema or syrinx.

2. Severe degenerative change C1-2 with multiple erosions and severe facet arthropathy. An erosive arthritis is possible, comparison with priors is recommended. There is no evidence of cord compression, although there is some flattening of the thecal sac due to soft tissue at the odontoid.

3. Severe multilevel facet arthropathy, greater on the RIGHT at C2-3, severe and greater on the LEFT at C3-4 with severe LEFT neural foraminal narrowing. Bilateral severe facet arthropathy at C7-T1 greater on the RIGHT.

4. Please review sagittal image 11, and there may have been a previous fracture through the facet on the RIGHT at C7-T1. Correlation with prior studies including prior CT would be helpful. There are multiple erosions at the RIGHT facet.

5. Fusion C4-5, C5-6, C6-7 appears solid.

Note: Dr. Bard would be happy to discuss these findings with the referring clinician at your clearance. Radiographs are dictated above.

PROCEDURE: MRI CERVICAL SPINE WITHOUT CONTRAST

INDICATION: Neck pain, LEFT side. Began seven months ago. No history of trauma. Initial encounter. There is a history of skin cancer surgery, hernia surgery, hand surgery not specified.

TECHNIQUE: Standard protocol.

FINDINGS:

No priors are available. There is slight rightward curvature on the scout view which could be positional. Cerebellar tonsils are within limits of normal. The cord is compressed at C4-5, no evidence of cord edema nor compressive myelopathy. There is some signal within the cord distally but this may represent artifact. There is sphenoid sinusitis. Distal vertebral arteries show flow voids suggesting patency, dominant LEFT. Pituitary is only partially visualized. Prevertebral soft tissues are normal.

The LEFT side C4-5 facet is markedly hypertrophied, with severe narrowing and degeneration, and edema. There are multiple erosions. This may represent sequelae of fracture, and priors would be helpful if available.

There is some pontine ill-defined hyperintense signal on the LEFT, sagittal images 8 and 9, possibly due to small vessel ischemic disease.

C1-2: Moderate facet arthropathy. Moderate degeneration. No canal stenosis.

C2-3: Mild spondylosis, moderately severe LEFT facet arthropathy, moderate on the RIGHT. There is slight flattening of the LEFT side of the thecal sac, and mild LEFT neural foraminal narrowing. Mild RIGHT neural foraminal narrowing as well.

C3-4: Mild spondylosis, 2 mm central and RIGHT paracentral protrusion and osteophyte. Severe facet arthropathy greater on the RIGHT. Moderate RIGHT neural foraminal narrowing with borderline nerve root impingement due to facet and disc. Mild LEFT neural foraminal narrowing.

C4-5: Moderate spondylosis. Broad 2 to 3 mm protrusion and osteophyte. There is also ligamentum flavum thickening and hypertrophy and the AP diameter is 8 mm. There is cord compression. There is severe LEFT facet arthropathy with multiple erosions and irregularity of the facet, and this could be sequelae of fracture or severe degenerative change. Moderate RIGHT-sided facet arthropathy. Severe LEFT neural foraminal narrowing. Moderate RIGHT neural foraminal narrowing with borderline nerve root impingement. There is cord compression, no definite edema.

C5-6: Moderate spondylosis. Broad 3 mm disc and osteophyte, there is moderate to severe LEFT and moderate RIGHT facet arthropathy. There is some endplate edema and fatty endplate changes. There is ligamentum flavum thickening or infolding. AP diameter is 9 mm. There is canal stenosis, slight flattening of the cord, but there is still CSF posterior to the cord.

Moderately severe LEFT neural foraminal narrowing, severe RIGHT neural foraminal narrowing.

C6-7: Moderate to severe spondylosis. There is bilateral facet arthropathy, mild to moderate. Moderate LEFT neural foraminal narrowing with borderline nerve root impingement. Mild RIGHT neural foraminal narrowing.

C7-T1: Mild spondylosis, moderate facet arthropathy. Mild LEFT neural foraminal narrowing, mild RIGHT neural foraminal narrowing.

T1-2: Moderate spondylosis and facet arthropathy. Mild to moderate neural foraminal narrowing.

At C7, there may be cervical ribs. Axial image 58. Please obtain radiographs including AP radiographs of the cervical spine to evaluate for cervical ribs at C7.

IMPRESSION:

1. Cord compression at C4-5. No evidence of edema or compressive myelopathy.

2. Canal stenosis with slight flattening of the cord at C5-6. AP diameter is 9 mm.

3. Severe multilevel facet arthropathy. The LEFT facet at C4-5 is hypertrophied, enlarged, and irregular with multiple erosions. There may be sequelae of fracture at this LEFT facet, prior studies or CT would be helpful.

4. Multilevel severe facet arthropathy at other levels as well contributing to neural foraminal narrowing.

5. Sphenoid sinusitis.

6. Possible cervical ribs at C7. Radiographs are recommended.

7. This patient has LEFT side neck pain. Neural foraminal narrowing is most severe on the LEFT at C4-5 as well as C5-6 and C6-7.

PROCEDURE: MRI CERVICAL SPINE WITHOUT CONTRAST

INDICATION: Neck pain in LEFT side, pain and radiculopathy. No history of trauma. Chronicity is uncertain. Initial encounter.

TECHNIQUE: Standard protocol without contrast.

COMPARISON: No priors are available.

FINDINGS:

On the scout view, there is some leftward cervical curvature and there is reversal of the normal lordosis. Cerebellar tonsils are within limits of normal. No cord lesion is seen. Bone marrow signal is mildly hypointense on T1-weighted scans, but probably normal for patient habitus. There is some artifact in the cord on the STIR sequence.

C1-2: Mild degeneration.

C2-3: Mild spondylosis and moderate to severe RIGHT with moderate LEFT facet arthropathy. Mild RIGHT neural foraminal narrowing due to facet arthropathy.

C3-4: Moderate spondylosis. A 3-mm LEFT paracentral protrusion and osteophyte flattening the thecal sac. AP diameter is 9 mm. Moderate facet arthropathy. Mild to moderate RIGHT and mild to moderate LEFT neural foraminal narrowing. No cord compression, although this does approach the cord.

C4-5: Moderate spondylosis. A 2-mm LEFT paracentral protrusion and osteophyte. This flattens the thecal sac. No canal stenosis. AP diameter is 10 mm. Mild to moderate facet arthropathy. Minimal neural foraminal narrowing.

C5-6: A 4-mm LEFT paracentral protrusion flattening the thecal sac and slightly flattening the cord. AP diameter centrally is 9 mm, but it is approximately 8 mm on the LEFT due to the protrusion. Mild to moderate facet arthropathy. Mild RIGHT and severe LEFT neural foraminal narrowing with impingement.

C6-7: Moderately severe spondylosis. A 3-mm disc and osteophyte, flattening the thecal sac. Mild facet arthropathy. AP diameter is 9 mm. Moderate LEFT neural foraminal narrowing with borderline impingement. Moderate RIGHT neural foraminal narrowing.

C7-T1: Moderate to severe facet arthropathy, mild spondylosis. A 2- mm LEFT paracentral protrusion. Minimal to mild LEFT and minimal RIGHT neural foraminal narrowing.

T1-T2: Mild spondylosis and facet arthropathy. No canal stenosis. Mild LEFT neural foraminal narrowing.

T2-3: Moderate spondylosis, greater on the LEFT. Moderate LEFT facet arthropathy. On the oblique reconstructions, there is moderate LEFT neural foraminal narrowing.

T3-4 is only seen on the oblique views. There is mild spondylosis, but the neural foramina are patent.

Thyroid is not enlarged. Visible major salivary glands are normal.

IMPRESSION:

1. A 4-mm LEFT paracentral protrusion at C5-6, with severe LEFT neural foraminal narrowing and LEFT-sided canal stenosis. This patient has LEFT-sided radiculopathy and pain.

2. There is also LEFT neural foraminal narrowing at C6-7 followed by C3-4. There is a 3-mm LEFT paracentral protrusion at C3-4 with spondylosis and borderline canal stenosis.

3. Straightening and reversal of the normal lordosis, with slight leftward cervical curvature.

4. Multilevel facet arthropathy, contributing to neural foraminal narrowing.

6.No evidence of compressive myelopathy.

PROCEDURE: MRI CERVICAL SPINE WITHOUT CONTRAST

INDICATION: Neck pain, pain and numbness down LEFT arm to hand. Radiculopathy for three weeks. Trauma is not specified. Acute, initial evaluation.

TECHNIQUE: Standard protocol without contrast. This includes sagittal oblique views to the neural foramina.

FINDINGS:

There is leftward cervical curvature on the scout views. There is straightening and slight reversal of the normal lordosis at C4-5. There is some slight cord compression at C4-5 although there is no evidence of edema to suggest compressive myelopathy. Cerebellar tonsils are within limits of normal. The pituitary is not covered. Distal vertebral arteries show flow voids indicating patency, dominant LEFT. Prevertebral soft tissues appear normal. Paraspinous soft tissues are normal. Sinuses are obscured.

Thyroid is limited but does not appear enlarged.

C1-2: Moderate degenerative change. Thickening of the soft tissues posterior to the odontoid, sagittal image 7. There is facet arthropathy at C0-1 and C1-2. No evidence of cord compression or stenosis. Visible portions of the cerebellum and pons are normal. There is some hazy hyperintensity in the pons, this is likely artifact.

C2-3: Moderate LEFT and severe RIGHT facet arthropathy and hypertrophy. Slight anterolisthesis. Instability is possible. Flexion and extension radiographs are recommended. There is mild to moderate RIGHT neural foraminal narrowing. No canal stenosis.

C3-4: Severe spondylosis, with osteophytic spurring greater on the LEFT. There is severe facet arthropathy. Moderate to severe LEFT and moderate RIGHT neural foraminal narrowing. No cord compression.

C4-5: Severe spondylosis. There is a 3 mm disc osteophyte complex greater on the RIGHT, the severe facet arthropathy and ligamentum flavum thickening are infolding, greater on the RIGHT. AP diameter is 8.5 mm. There is slight flattening of the cord, no cord edema. Severe LEFT and severe RIGHT neural foraminal narrowing.

C5-6: Moderate to severe spondylosis. There is disc osteophyte complex and moderate facet arthropathy greater on the RIGHT. Mild to moderate LEFT and mild RIGHT neural foraminal narrowing.

C6-7: Moderately severe spondylosis. There is a 3 mm LEFT paracentral protrusion along with osteophyte, moderate facet arthropathy. Moderately severe LEFT neural foraminal narrowing. Moderately severe RIGHT neural foraminal narrowing.

C7-T1: Minimal spondylosis, moderate facet disease, neural foramina are patent.

T1-2: Mild spondylosis and mild facet arthropathy. Mild to moderate RIGHT and mild LEFT neural foraminal narrowing.

IMPRESSION:

1. Canal stenosis at C4-5 with cord compression but no evidence of myelopathy or syrinx.

2. This patient has LEFT-sided symptoms. Neural foraminal narrowing is most severe on the LEFT at C4-5, followed by C3-4 and C6-7.

3. Multilevel facet arthropathy, most severe at C3-4, as well as C2-3 and C4-5.

4. Leftward cervical curvature and straightening of the normal lordosis.

5. Dr. Bard would be happy to discuss these findings the referring clinician at your convenience.

PROCEDURE: **MRI LEFT femur without contrast, MRI LEFT hip without contrast**

INDICATION: Large contusion LEFT hip and lower extremity, possible large vessel bleed.

COMPARISON: None

TECHNIQUE: Multiplanar MRI performed through the LEFT hip. Multiplanar MRI performed through the LEFT femur. Fat suppression artifact limits portions of evaluation.

FINDINGS:

There is extensive muscular injury around the LEFT hip.

There is a partial tear at the lateral margin of the LEFT gluteus maximus muscle, near the insertion at the posterior tensor fascia lata and iliotibial tract. There is some focal T1 hyperintensity along this margin, suggesting subacute hemorrhage as well as partial insertional tear.

There is a gluteus medius high-grade partial tear at the insertion of the posterior lateral greater tuberosity.

There is complex fluid signal, bright on T1-weighted scans and T2-weighted scans, within the gluteus maximus bursa between the LEFT gluteus maximus and greater trochanter. This suggests acute hemorrhage.

Axial image 20 series 3.

There is a partial tear of the LEFT gluteus minimus muscle extending to the myotendinous junction. The gluteus minimus insertion is preserved.

There is a partial tear of the tensor fascia lata muscle and some superficial fluid, likely acute hemorrhage. This is not loculated. There is a partial tear of the LEFT iliotibial band.

The LEFT hip itself is moderate degenerative change, some fluid signal distal to the anterior labrum, probably some degenerative labral tear. Posterior labrum is preserved. Anterior superior labrum is intact. There is grade I chondromalacia. The ligamentum teres is intact. Superior aspect of the iliofemoral ligament is preserved. There is a small amount of fluid at the anterior inferior labrum, images suspect a small labral tear.

There is minimal edema within the psoas muscle, although the tendon is preserved. Mild hamstring tendinosis, no tear. The visible and abductor musculature is preserved.

The RIGHT hip, seen on the study of the LEFT femur, shows moderate degenerative change, no evidence of avascular necrosis. There is a fluid collection, 13 mm, the anterior inferior RIGHT hip probably a combination of either iliopsoas bursitis versus a labral or ligament tear in this region. This is not seen in detail.

There is some edema at the RIGHT tensor fascia lata but the rest of the musculature is preserved. The RIGHT adductor musculature is intact.

Prostate is enlarged, with multiple areas of T2 hyperintensity within the transitional zone. Prostate measures 6.0 x 5.6 x 6.0 cm AP dimensions. Seminal vesicles are grossly normal. Bladder is grossly normal. There is a small LEFT inguinal indirect hernia containing omental fat. The RIGHT testicle is 4.5 cm. Left testicle is small, atrophic.

IMPRESSION:

1. Extensive LEFT pelvic girdle acute muscular injury. Partial tears of the LEFT gluteus maximus at the insertion with hemorrhage, complex hematoma within the gluteus maximus bursa, and partial tear of the gluteus and medius muscle and tendon. Partial tear LEFT tensor fascia lata muscle.. Partial tear of the LEFT gluteus minimus muscle and tendon to a lesser degree.

2. Moderate LEFT hip degenerative changes with likely small labral tear, but no evidence of fracture nor avascular necrosis. 8 Dr. Musculature is preserved.

3. Enlarged prostate, 6 cm.

4. Moderate RIGHT hip degenerative changes with a fluid collection suggesting either iliopsoas bursitis versus a para labral cyst at the anterior inferior RIGHT hip. No avascular necrosis or fracture.

5. There is a small hematoma within the gluteal bursa, but no large organized hematoma in the subcutaneous tissues. Dr. Bard contacted referring clinician at 9:38 PM.

PROCEDURE: **MRI OF THE LEFT FOOT WITHOUT AND WITH CONTRAST**

INDICATION: Osteomyelitis LEFT foot. Patient has a wound at the lateral fifth metatarsal base. Patient has bilateral foot pain, intermittent. Left midfoot ulcer for two months, unhealing. Diabetes, hypertension. Fourth toe amputated six months ago.

COMPARISON: None.

TECHNIQUE: MRI of the LEFT foot with and without contrast. 15 cc Gadavist. GFR is 122. Creatinine is 0.8.

FINDINGS:

There is edema, destruction and enhancement at the fifth metatarsal base. A subtle fracture line is visible on long-axis images, series 15. There is cortical loss and irregularity of the dorsal and lateral fifth metatarsal base, probably also the plantar fifth metatarsal base.

This is consistent with osteomyelitis.

There is edema throughout the fifth metatarsal shaft, including the metatarsal head but sparing portions of the MTP joint. No discrete fracture nor other abnormality can be seen. This could represent osteomyelitis, stress reaction, or reactive bone marrow.

There is dorsal subcutaneous edema, subcutaneous edema at the plantar and lateral aspect of the LEFT foot, and there is edema and enhancement at the distal abductor digiti quinti.

No evidence of Lisfranc injury. The first interosseous Lisfranc ligament is intact.

There is extensive subcutaneous edema and enhancement throughout the LEFT foot. No evidence of pes planus.

IMPRESSION:

1. Findings consistent with osteomyelitis LEFT fifth metatarsal base. This includes the base and proximal shaft for approximately 3 cm.

2. Extensive subcutaneous edema and muscular edema. Greatest dorsal and plantar lateral edema and enhancement.

3. Degenerative changes.

PROCEDURE: **MRI LOWER EXTREMITY (FOOT) WITHOUT AND WITH CONTRAST - LEFT**

INDICATION: Bone lesion, third LEFT metatarsal medially. History of malignancy, Waldenstrom's macroglobulinemia with chemotherapy in 2016. Patient had fourth and little toe surgery in 2016 with subsequent pain and swelling in the third ray.

COMPARISON: Comparison is with a dated September 27, 2017 which shows a single frontal image. The second metatarsal head is circled. There is a great toe MTP joint replacement.

TECHNIQUE: Standard protocol with and without contrast. 10 cc of Gadavist was injected.

FINDINGS:

There is edema within the proximal phalanx LEFT third ray. No discrete fracture line is seen. There is some periosteal edema. There is a small amount of edema in the proximal phalanx shaft, sparing the head.

There is a small amount of endosteal edema along the lateral and plantar margins of the third metatarsal head. No fracture is seen.

There is mild to moderate narrowing of the third MTP joint. There is dorsal subluxation of the proximal phalanx relative to the third metatarsal head. Sagittal image 13. There is subtle chondral irregularity and flattening. Review of the plantar plate shows thickening and partial tearing of the lateral accessory collateral ligament at the third MTP joint. Series 4 image 20 and 19. Posteriorly, the rest of the accessory collateral and proper collateral ligaments are intact. There is a small joint effusion. The distal plantar plate is not complete, and is torn based on sagittal images.

Discussion with the referring clinician revealed additional history of radiographs showing a cyst at the medial aspect of the second metatarsal neck. Possible enchondroma.

On the current study, there are small amounts of endosteal edema at the second metatarsal head lateral and plantar. Joint capsule is preserved. There is a small effusion.

There are no erosions. There is no evidence of sclerosis. There is minimal edema within the metatarsal shaft but no evidence of extensive stress reaction or fracture.

No evidence of any T2 hypointensity or calcifications within the metatarsal shaft that would suggest enchondroma nor other bone lesion. There is an indentation along the medial and lateral margins of the second and third metatarsal heads, but these are not erosions, these are normal variations.

There is some edema at the third interspace, no evidence of a discrete mass such as neuroma. There is a great toe MTP joint replacement with a few small bone fragments seen on the radiographs. There is some T2 hyperintensity in the metatarsal and proximal phalanx as well as the phalanges but some of this probably represents artifact. There is a dorsal spur at the remainder of the metatarsal head. No evidence of any fracture nor major malalignment at this region.

Minimal endosteal edema at the fifth metatarsal head. Plantar plate is preserved. Fourth MTP joint is preserved with mild degeneration.

Intrinsic musculature is normal. No evidence of Lisfranc injury. The fifth metatarsal base is partially cut off. No acute fracture is seen however.

IMPRESSION:

1. Plantar plate injury LEFT third MTP joint. Dorsal subluxation at the MTP joint.

2. Edema within the third proximal phalanx. Fracture is possible although no discrete fracture line can be identified. This edema is greater at the plantar proximal phalanx, and it is possible this is related to plantar plate and joint capsular injury.

3. Small amounts of endosteal edema at the second metatarsal head. There is no evidence of any enchondroma. No evidence of any osseous lesion within the metatarsal head or shaft of the second ray.

4. MTP joint replacement. No evidence of any loosening nor fracture on this study, although radiographs may be better to evaluate for any subsidence or loosening of the prosthesis.

5. The current single radiograph printed on paper is limited in evaluation.

6. Dr. Bard contacted the referring clinician at 11:38 AM. Dr. Bard will be happy to discuss these findings with the referring clinician after review of images and report, but no bone lesion at the second metatarsal or MTP joint can be seen.

PROCEDURE: **MRI OF THE RIGHT FOOT WITHOUT AND WITH CONTRAST**

INDICATION: Pain at base of toes between second and third toes. No trauma.

COMPARISON: None.

TECHNIQUE: Standard protocol through the forefoot with and without contrast.

CONTRAST: 9 cc of Gadavist was administered.

FINDINGS:

Clinical notes are reviewed. There is a palpable mass at the plantar foot, with a positive Mulder sign.

There is a mass at the second interspace, between the second and third metatarsal heads but centered slightly distal to them. There is a dorsal component, mixed signal but bright on T2-weighted scans, approximately 10 x 10 mm, series 5 image 13, series 12 image 14. This area is isointense to muscle on T1-weighted scans, heterogeneous but hyperintense, bright on T2-weighted scans, and there is a thick rind of peripheral irregular enhancement. This pattern is suggestive of a neuroma but for the fact that this is at the dorsal and slightly distal aspect of the intermetatarsal space and this enhancement does not extend to the deep transverse metatarsal ligament.

There is a thin sliver of fluid signal without enhancement at the intermetatarsal space between the second and third metatarsal heads, series 12 image 17.

The plantar aspect of this mass is complex, with irregular margins and isointense to muscle in T1-weighted scans and hypointense to muscle on T2-weighted scans, but has some mixed signal, some septations, and some areas of T2 hypointensity, series 5 image 12. This region does not enhance.

This plantar aspect of the mass extends along the lateral margin of the distal third metatarsal and is located at around the third flexor tendons and second flexor tendons. This distally follows portions of the second flexor tendons, series 5 image 11.

Portions of this mass have the appearance of neuroma, but the overall appearance does not exactly fit this. Clinical examination reportedly does correspond to this but, given the extent of this and the plantar aspect, there are other possibilities.

Ancillary findings are reviewed. There is moderate great toe MTP arthrosis, with some irregularity at the plantar plate. Slightly prominent distal recess but, overall, this is preserved.

Second plantar plate is intact. There are no erosions within the second ray and no capsular or ligament disruption.

Third MTP joint shows no evidence of a plantar plate injury. Mild degenerative changes, with no evidence of erosions. There are small second and third MTP joint effusions.

These findings suggest PVNS. Erosive arthritis or intermetatarsal bursitis is less likely.

The T2 hypointensity nodules and hypointense septations at the plantar collection raise the possibility of giant cell tumor of tendon sheath. Synovial chondromatosis is possible but less likely, unless radiographs or CT demonstrate calcifications in this region.

It is possible this is a ganglion cyst that has either been infected or treated but, absent any treatment, trauma or sign of infection, ganglion cyst is less likely.

Epidermal inclusion cyst that has ruptured, been infected, or been partially treated or lanced can have a similar appearance. The distribution, however, is less suggestive of this.

There is no evidence of Lisfranc injury nor metatarsal fracture. There is a Morton's toe. Visible midfoot is preserved. Intrinsic musculature is preserved. Peroneal brevis insertion is intact. Plantar fascia origin is not visible, but the visible portion of the plantar fascia is normal.

There is also some intermediate signal within the third interspace, and fluid signal extends from the plantar second interspace along the lateral margin of the third metatarsal into the third interspace. Examination of the third interspace is also recommended if surgery is performed. There is some enhancement along the dorsal aspect of the third interspace.

IMPRESSION:

1. The differential for the second interspace mass includes a complex neuroma, giant cell tumor of tendon sheath, ruptured or infected complex epidermal inclusion cyst, ruptured or infected ganglion cyst. There may be a combination of these. There is variable enhancement and variable signal intensity between the different parts of this mass and extension to the third interspace, as well.

2. This RIGHT foot complex mass has a dorsal peripherally enhancing component at 10 mm with a thick rind of enhancement. Appearance at this area is somewhat suggestive of neuroma.

3. However, the plantar aspect of this mass does not enhance and has some T2 hypointense foci and septations and contact with the flexor tendons. There are no bony erosions to suggest PVNS. Giant cell tumor tendon sheath is a possibility; however, the lack of enhancement makes this less likely.

4. Complex partially ruptured epidermal inclusion cyst or complex infected ganglion cyst or other considerations, and the enhancement could be variable.

5. Please note there is extension of a portion of this mass along the plantar aspect of the second flexor tendons at the proximal phalanx.

6. If surgery is contemplated, this plantar component, as well as another portion of this mass that extends along the lateral margin of the third metatarsal, should be taken into account. The third interspace mass to be examined. Series 5 image 13.

7. This patient does have prior surgery but reportedly not in this region. It should be confirmed that there was no prior procedure, history, or trauma in this region, as the appearance of this is complex and may indicate either infection or prior instrumentation.

8. Dr. Bard contacted the referring clinician at 8:23 AM 9/27/2017.

NOTE: Dr. Bard would be happy to discuss these findings with the referring clinician at your convenience. Radiographs would be helpful to exclude any calcifications or ossifications.

PROCEDURE: MRI OF THE RIGHT FOOT/ANKLE WITHOUT AND WITH CONTRAST

INDICATION: Creatinine is 1.4, GFR is 48. Plantar fascia fibromatosis. Proximal to the first metatarsal head 4 x 3.5 cm. None mobile.

COMPARISON: None

TECHNIQUE: Multiplanar MRI was performed without contrast. 12 cc Gadavist was injected.

FINDINGS:

There is a mass plantar to the great toe metatarsal. This mass infiltrates the medial plantar fascia, is isointense on T1-weighted scans, mildly hyperintense on the T2-weighted scans, and shows diffuse enhancement.

This is likely a plantar fibroma.

This mass measures 3.8 cm in AP dimensions, 2.5 cm in transverse dimensions, 1.7 cm in CC dimensions.

The markers are located at the midfoot, and there is some thickening of the proximal medial tubercle plantar fascia, although the origin is not covered. Short axis series 4 image 4. This thickening measures 8 mm. Note that this is not the origin. This does show some enhancement and nodularity, suggesting this is a plantar fibroma. Series 11 image 5.

Distal to the first area of thickening, there is a second area of thickening measuring 5 mm on image 11. There is no enhancement. Series 11 image 11.

The third, distal most, area of abnormality is a large plantar fibroma. The other regions of thickening or also likely fibromatosis, the largest distally, the second more proximal, and the third in the middle. This is all at the medial tubercle.

There is multilevel moderate IP joint degenerative change, greater at the great toe IP joint. There is a hallux valgus, with moderately severe degenerative change and large erosions at the median eminence. There is lateral subluxation of the sesamoids and some associated medial capsular thickening, and lateral capsular thinning of the great toe MTP joint. No evidence of plantar plate injury.

There is a small erosion at the fifth metatarsal head and MTP joint. Second through fourth MTP joints are preserved. There is no Lisfranc injury. There is a small amount of subchondral edema at the second interspace at the base of the second and third metatarsals.

There is dorsal subcutaneous edema and enhancement, of uncertain significance.

No evidence of a neuroma. Intrinsic musculature aside from flexor digitorum brevis is preserved. There is a strain of the adductor hallucis, of doubtful clinical significance.

IMPRESSION:

1. There is plantar fibromatosis with three separate areas of fibromas in the visible plantar fascia.

2. The most distal region is the largest, 38 mm in AP dimensions. The most proximal visible plantar fibroma is second largest, and there is another one in the middle which is smallest.

3. Plantar fascia origin is not covered on this study.

4. Hallux valgus.

5. Dr. Bard would be happy to discuss these findings with the referring clinician at your convenience.

PROCEDURE: MRI LOWER EXTREMITY (RIGHT FOOT) WITHOUT CONTRAST

INDICATION: Cuboid fracture, pain, two months. Lateral RIGHT foot pain. Trauma.

COMPARISON: None. Radiographs in the office where performed, are not available.

TECHNIQUE: Multiplanar MRI was performed without contrast.

FINDINGS:

There is an osteochondral defect at the medial talar dome with a T2 hyperintense rim, possibly a loose body. This is still within the defect, however.

This defect measures 15 mm in AP dimensions, 10 mm transverse dimensions, and approximately 5 to 6 mm in CC dimensions on the sagittal images.

There is a rim of sclerosis followed by a second line of edema. On the fat-suppressed sequences, there is evidence of a loose body still within this defect; this patient would benefit from high-resolution CT through the hindfoot.

There is no evidence of an acute cuboid fracture. There is subtle cortical irregularity along the central portion of the cuboid and a subtle possible fracture line that is healed. No evidence of an acute fracture.

There is some dorsal edema at the talonavicular joint, greater at the talus, series 6 image 18; no fracture is seen.

There is edema with cystic change along the base of the first cuneiform, axial image 28. This could represent sequelae of fracture. It is unlikely this represents a cystic bone lesion, more likely sequelae of contusion or fracture, series 6 image 22. Although the forefoot and portions of the midfoot are not fully covered, there is no evidence of acute Lisfranc injury nor dislocation.

The anterior talofibular ligament is intact. Posterior talofibular ligament shows some intermediate signal, likely subtle partial tearing, the majority is preserved. Calcaneofibular ligament is thickened with a subtle partial tear, no high-grade partial or full-thickness tear.

There is a split tear peroneal brevis, axial image 16, with the separation allowing a portion of the peroneal longus to pass between these fragments. Distal brevis insertion is normal. There is longus tendinosis, no high-grade partial or full-thickness tear. Extensor tendons are intact.

There is posterior tibial insertional tendinopathy, there is a type II navicular with an accessory ossicle and insertional tendinosis. There is a small amount of edema within the accessory ossicle, series 4 image 25, consistent with tendinosis, but no evidence of fracture. Calcaneonavicular spring ligament is mildly thickened but intact. Tibiospring ligament is intact. Flexor hallucis longus and digitorum longus and knot of Henry are intact. The tarsal tunnel is preserved.

Mild Achilles tendinosis within the mid Achilles and watershed zone, mild distal tendinosis and tenosynovitis. Minimal enthesopathy, no tear.

Plantar fascia shows edema within the plantar fascia origin, greater at the medial tubercle but throughout the central band portion and lateral tubercle. There is no disruption of the plantar fascia, although there is some edema deep and superficial to the plantar fascia origin. There is edema within the proximal flexor digitorum brevis and a small part of the abductor digiti quinti. No high-grade partial or full-thickness tear. No distal tendinosis nor fibromatosis.

Mild degenerative change at the subtalar joint. No os trigonum. Small amount of fluid in the subtalar joint but no evidence to suggest sinus tarsi syndrome.

IMPRESSION:

1. Osteochondral defect RIGHT medial talar dome 15 x 10 x 5 mm.

2. There is evidence of a loose body within this on MRI, short axis image 23 series 8. Thin-cut CT is recommended to determine if this is a complete loose body or whether there is still some attachment within this. Osteochondral sinus tarsi syndrome.

3. No evidence of cuboid fracture.

4. High-grade partial split tear peroneal brevis. Insertion is normal.

5. Plantar fasciitis with extensive stress reaction, stress edema at the plantar calcaneus. This includes medial and lateral tubercles, and there is some plantar fascial thickening but no disruption. There is underlying muscular thickening.

6. Posterior tibial tendinosis with some edema in the accessory navicular, no high-grade partial or full-thickness tear. No evidence of sinus tarsi syndrome.

7. Syndesmosis is intact. Aside from a partial tear posterior talofibular ligament, ankle ligaments are preserved.

PROCEDURE: MRI LEFT FOOT WITHOUT CONTRAST

INDICATION: Pain in left foot, M796.72.

COMPARISON: None.
TECHNIQUE: Multiplanar MRI was performed without contrast.

FINDINGS:
There is evidence of Freiberg's infraction. There is edema and cystic change within the second metatarsal head. There is flattening of the second metatarsal head and some chondral irregularity. There is also edema at the dorsum of the second proximal phalanx. There is surrounding subcutaneous edema at the second proximal phalanx.

Findings are suggestive of LEFT second metatarsal Freiberg's infraction. Acute trauma is another possibility. The plantar plate is preserved.

There is edema within the fifth proximal phalanx and fifth middle phalanx as well as the base of the fifth distal tuft. Series 5 image 5, confirmed on short axis and sagittal imaging. This may represent contusion, there is no collapse. No fracture lines are seen.

There is soft tissue thickening and edema at the plantar aspect of the third ray, plantar to the distal tuft. Sagittal image 10 on series 9. This may represent a small hemangioma. There is no bone erosion or destruction, but please evaluate the toe pad at the third RIGHT.

There is hallux valgus. There are erosions at the medial epicondyle. Moderate great toe MTP joint arthrosis with grade II chondromalacia at the plantar aspect of the MTP joint. There is a small amount of edema at the medial aspect medial sesamoid but no fracture. Lateral sesamoid is preserved, and there is some chondral loss at the lateral plantar facet with a small amount of edema in the metatarsal head. The muscular attachments at the proximal aspect lateral sesamoid show edema, and there is thickening of the lateral accessory sesamoid ligament. There is edema within flexor hallucis brevis, medial and lateral heads, and a fluid collection between the first and second metatarsal heads, probably extension of fluid from the second MTP joint. There is thinning or loss of the medial proper collateral ligament at the second MTP joint. Short axis image 23.

IMPRESSION:
1. Acute Freiberg's infraction of the LEFT second metatarsal head.
2. Hallux valgus with moderate degenerative changes.
3. Edema within the fifth ray phalanges, no discrete fracture is seen nor cortical destruction.
4. Soft tissue thickening and edema at the plantar third distal tuft. This may represent a small soft tissue nodule. There is no evidence of any bone invasion or destruction, this is unlikely to represent a glomus tumor. This may represent small hemangioma. Series 5 image 32.

Dr. Bard communicated with the referring clinician at 4:34 PM.

PROCEDURE: **MRI RIGHT FOOT WITHOUT CONTRAST**

INDICATION: Posterior tibial tendon rupture, versus inflammation.

COMPARISON: None.

TECHNIQUE: Multiplanar MRI through the RIGHT ankle and hindfoot was performed.

FINDINGS:

There is a high-grade partial tear of the RIGHT distal posterior tibial tendon and of the calcaneonavicular spring ligament. Greatest injury and is approximately 2 cm proximal to the insertion.

The posterior tibial tendon myotendinous junction shows some muscle edema and tenosynovitis. There is extensive posterior tibial tenosynovitis along the posterior margin of the medial malleolus.

Tendinopathy begins along the partial tearing at the medial malleolus. Distal to the medial malleolus, there is a crescentic split tear of the anterior and anterolateral aspect of the posterior tibial tendon. This is greater than 50% tear, T1-weighted scans show that portions of this are greater than 70 to 80% tear. Portions of the tendon blend in with the calcaneonavicular spring ligament making the exact dimensions of the tear difficult, but this is a high-grade partial tear.

Calcaneonavicular spring ligament is thickened, irregular and partially torn. There is fluid within the calcaneonavicular ligament along with soft tissue thickening and edema extending to near the calcaneal origin. Other portions of the spring ligament are also partially torn including the superior medial oblique ligament. The tibiospring ligament is irregular and partially torn as well. There is no evidence of valgus deformity yet although there is a cavus seen on sagittal images, but this needs to be confirmed with standing radiographs.

Flexor hallucis longus and flexor digitorum longus show tenosynovitis. Flexor digitorum longus shows some mild tendinosis and slight flattening along the inferior aspect of the navicular, the knot of Henry shows tenosynovitis, coronal image 8.

No accessory ossicle is seen at the medial navicular. There is roughening and irregularity at the medial margin of the navicular, at the posterior tibial insertion and this partial tear extends to the insertion, but greater portions of intact tendon are seen near the insertion. Distal insertions are also visible, axial image 26.

There is peroneal longus and brevis tenosynovitis. There is tendinosis with deformity and a split tear peroneal brevis, axial image 21. The brevis insertion shows some surrounding tenosynovitis but is intact. Longus insertion is not fully evaluated but appears intact.

There is extensor digitorum longus and tibialis anterior tenosynovitis, mild insertional tendinosis but no high-grade partial or full-thickness tear.

There is Achilles tendinosis greatest along the undersurface at the distal watershed zone. There is some fraying along the undersurface of the Achilles at the posterior os calcis, there is a minimal Haglund deformity, but there is insertional enthesopathy. Although there is insertional enthesopathy, no high-grade partial or full-thickness tear can be seen. The greatest tendinopathy is between the junction of the watershed zone and posterior os calcis.

There is a large 8 mm plantar calcaneus spur at the medial tubercle with minimal edema. There is mild thickening of the proximal medial tubercle plantar fascia origin as well as the central band and mild thickening of the lateral tubercle origin as well. However, no high-grade partial or full-thickness tear can be seen. Minimal edema at the abductor digiti quinti and flexor digitorum brevis. Minimal heel pad edema. This is probably incidental to the patient's current symptoms.

Anterior talofibular ligament is difficult to visualize on axial images, mildly thickened but intact. Calcaneonavicular ligament is intact. Posterior talofibular ligament does contain some fluid signal with a subtle partial tear coronal image 24, but overall is preserved. There is edema within the posterior lateral process with a few small erosions, along posterior lateral process sagittal image 9 but no evidence of os trigonum. There is mild to moderate posterior subtalar arthrosis.

There is some mild inflammatory change in the sinus tarsi. No evidence of ligament injury nor retinaculum injury.
The syndesmosis is intact. There are a few cystic changes at the tibial plafond, mild tibiotalar arthrosis, no osteochondral defect.
Mild calcaneocuboid arthrosis. Mild to moderate talonavicular arthrosis with a pes cavus.
The midfoot is not fully evaluated. There are some erosions at the first interspace, the first interosseous Lisfranc ligament is not fully covered on axial images but appears intact on short axis images. There is some edema within the metatarsal bases including the fourth and the third, some of which might represent artifact.

IMPRESSION:

1. High-grade partial tear of the distal RIGHT posterior tibial tendon, with greater than 70% visible tendon tear. The tendon is macerated, greatest 2 cm proximal to the insertion.

2. Calcaneonavicular spring ligament tear. Tibiospring ligament tear.

3. The knot of Henry shows tenosynovitis but is preserved.

4. No accessory ossicles are visible.

5. Split tear peroneal brevis. Multitendon tendinosis.

6. Achilles tendinosis with partial undersurface tearing near the distal watershed zone. Insertional enthesopathy. No high-grade partial or full-thickness tear.

7. No evidence of focal bone sinus tarsi syndrome nor subtalar instability. Mild inflammatory change in the sinus tarsi.

PROCEDURE: **MRI RIGHT FOOT WITHOUT CONTRAST**

INDICATION: Bilateral foot pain, MTP joints. Clinical notes are reviewed. Pain at the ball of foot and toes. Intermittent swelling. Six months. Cardiac bypass. Patient has a cardiac monitor.

COMPARISON: None.

TECHNIQUE: Multiplanar MRI through the RIGHT forefoot was performed.

FINDINGS:

Reviewing the images, no fractures can be seen in the phalanges and metatarsals. No Lisfranc injury. There is an approximate 1 cm dorsal fluid collection at the third proximal metatarsal interspace series 6 image 12, likely a ganglion cyst, possibly arising from either the joint or the associated extensor digitorum tendons. Series 3 image 36. There are erosions and some subchondral edema at the TMT joints, no malalignment.

The MTP joints all show hyperextension, hyperdorsiflexion. These will be reviewed, but the patient has pain at the ball of the foot.

There is intrinsic muscular edema within portions of the second dorsal interossei, first plantar and second plantar interossei, third dorsal interossei and also the third plantar and fourth dorsal interossei muscles. No evidence of a tear, however.

Great toe MTP joint shows mild hallux valgus, severe subchondral edema at the plantar and slightly medial aspect of the metatarsal head, at the medial plantar facet. There is moderately severe degeneration at the medial plantar facet, a small amount of edema within the lateral aspect of the medial sesamoid series 3 image 24. There is evidence of a fracture line through the medial sesamoid series 4 image 26, but only minimal edema suggesting this may have represented a healed fracture. There is chondral loss, and there is also subchondral edema at the lateral margin of the metatarsal head. Moderate to severe bilateral facet degenerative change.

The plantar plate is slightly thickened and irregular, there is fluid distally but this may represent a normal distal recess of the plantar plate series 7 image 26. There is moderate degenerative change at the MTP joint. No definite plantar plate injury.

Second MTP joint shows hyperdorsiflexion, moderate MCP joint arthrosis with some edema at the lateral second metatarsal head, the plantar plate appears intact.

Third MTP joint is hyperdorsiflexion, with widening at the distal plantar plate suggesting a plantar plate tear sagittal image 15. Mild to moderate degeneration.

Fourth MTP joint shows moderate degeneration with a dorsal effusion, some thinning of the distal plantar plate but no evidence of acute tear.

Fifth MTP joint shows mild to moderate degeneration, perhaps a mild bunionette but no destruction. No evidence of plantar plate injury.

The dorsum of the second metatarsal head is slightly flattened series 5 image 18, but this is more likely irregular chondral region and dorsal spurring rather than any Freiberg's infraction.

There is extensive plantar fibromatosis. This can be followed on the sagittal images, where there is likely plantar fasciitis at the medial tubercle, sagittal image 17, but distal to this, at the level of the proximal metatarsals, there is an irregular, thickened region measuring 34 mm proximal to distal dimensions. This thickness is 10 mm. This is a large plantar fibroma or multiple plantar fibromatosis. Transverse dimensions are 25 mm, and extends from the first through the third flexor tendons.

No evidence of neuroma.

IMPRESSION:

1. Extensive RIGHT foot plantar fascial fibromatosis described in detail above. This is at least 3 cm in proximal to distal dimensions, markedly thickened and in CC and transverse dimensions and irregular. There is no report of prior surgery or procedure, and this is likely multinodular plantar fascial fibromatosis. This may account for some of the patient's symptoms.

2. Moderately severe great toe extensive edema, chondromalacia and also edema at the sesamoid, possibly sequelae of fracture but no current fracture.

3. Moderately severe second MTP joint arthrosis with hyperextension, no definite plantar plate injury.

4. Third MTP joint plantar plate injury and hyperextension.

5. No metatarsal fracture. Dorsal ganglion cyst at the proximal third interspace between the proximal third and fourth metatarsal heads. No Lisfranc injury although there is moderate degeneration and some erosions.

6. Dr. Bard would be happy to discuss these findings with the referring clinician at your convenience.

PROCEDURE: **MRI LEFT ankle without contrast.**

INDICATION: Plantar fasciitis. 1 year. Prior injections and therapy. No trauma. Initial encounter.

COMPARISON: None

TECHNIQUE: Multiplanar MRI was performed without contrast.

FINDINGS:

There is LEFT ankle plantar fasciitis involving the medial tubercle and central band.

There is thickening of the medial tubercle plantar fascia origin, with thickening measuring 10 mm in CC dimensions and extending for approximately 47 mm before completely tapering. There is edema within the plantar calcaneal spur and plantar os calcis, likely stress reaction. No discrete stress fracture is seen. The central band is thickened as well, series 6 and 1 image 34. There is a small amount of thickening at the lateral tubercle origin, but this is otherwise preserved.

There is edema within the origin of the flexor digitorum brevis,, and also edema along the medial margin of the abductor digiti quinti. Series 501 image 32. Distally, these muscles are preserved. There is some mild fibromatosis of the medial tubercle plantar fascia on coronal image 25, but otherwise this plantar fascial abnormality begins at the origin.

Tarsal tunnel is preserved. No evidence of accessory muscle, no evidence of inflammatory change.

There is mild Achilles tendinosis and tenosynovitis. Mild Haglund deformity with minimal edema. Mild enthesopathy. No evidence of stress reaction at the insertion.

Regarding the ankle, anterior talofibular ligament is intact. Calcaneofibular ligament is slightly thickened but preserved. There is a tear containing fluid signal within the posterior talofibular ligament, but much of the fluid is between the posterior tibiofibular and talofibular ligaments. The syndesmosis is intact. Deltoid ligament shows a distal strain in the medial gutter. Ankle mortise and talar dome are preserved.

Extensor tendons are intact. There is peroneal longus and brevis tenosynovitis, mild tendinosis, no tear. Brevis insertion is preserved. Longus insertion is intact.

Reviewing the axial images, there is a small accessory tendon and muscle, likely a peroneal Quartus, best seen on axial images. This may be associated at times with additional symptoms.

Posterior tibial tendon shows some distal tenosynovitis and insertional tendinosis. No evidence of an accessory ossicle at the insertion. There is some thickening and intermediate signal within the calcaneonavicular spring ligament, but no evidence of any acute tear. Tibial spring ligament is preserved.

Subtalar joint shows some mild inflammatory change. The cervical and interosseous ligaments are intact. There is minimal edema at the angle of Gissane. At best there is minimal subtalar joint degeneration. There is no evidence of os trigonum. There is some mild to moderate posterior subtalar arthropathy.

Calcaneocuboid and talonavicular joints show mild degenerative change. There is mild intertarsal joint degenerative change. No evidence of Lisfranc injury at the midfoot.

No evidence of any muscle atrophy nor Baxter neuropathy.

IMPRESSION:

1. Plantar fasciitis greatest involvement of the LEFT medial tubercle plantar fascia, followed by the central band. There is muscle edema but no high-grade partial or full-thickness tear.

2. There is stress edema at the plantar calcaneus. No evidence of discrete stress fracture.

3. Edema within the origin of the flexor digitorum brevis and along the margin of the abductor digiti quinti, but no evidence of muscular atrophy. There is minimal heel pad edema.

4. Dr. Bard will be happy to discuss these findings the referring clinician at your convenience. There is also likely a small peroneal Quartus muscle and tendon. This can often be incidental but occasionally can be associated with peroneal symptoms. Axial series 301 images 19 through 16.

PROCEDURE: MRI LUMBAR SPINE WITH AND WITHOUT CONTRAST.

INDICATION: Low back pain, RIGHT side pain extending into the RIGHT hip and inguinal region. Laminectomy February 2017.

COMPARISON: 8/23/2016 MRI lumbar spine without contrast. Radiographs 9/27/2016 with flexion and extension, and radiographs three views 1/23/2018.

TECHNIQUE: Standard protocol through the lumbar spine with and without contrast. 9 cc Gadavist was injected. 1 cc discarded.

FINDINGS:

There is leftward lumbar curvature. There is endplate edema at L3-4, L4-5, and some endplate edema and fatty endplate change at L5-S1. There is enhancement at L3-4, L4-5 and L5-S1. The enhancement and edema at L3-4 is new. Conus medullaris terminates at L1. Paraspinous soft tissues show some facet edema on the LEFT at L3-4.

Artifact slightly limits evaluation. Abdominal aorta is mildly ectatic but there is no aneurysm. IVC is normal. Right renal posterior 18 mm T2 hyperintense lesion, most likely a simple cyst.

Counting is based on the assumption of five lumbar vertebrae.

There is extensive epidural lipomatosis throughout the lumbar spine, which was seen to a greater extent previously at L4 and L5, but now has been partially resected at these levels.

T11-12: Normal.

T12-L1: Normal.

L1-2: Normal.

L2-3: Minimal spondylosis. Mild facet disease. Stable findings.

L3-4: Posterior endplate edema and endplate enhancement. There is an extradural mass in the RIGHT lateral recess posterior to L4 which appears to be attached to the L3-4 disc space, sagittal image 7. This measures 9 x 8 mm AP and transverse dimensions, and approximately 15 mm CC dimensions sagittal image 7. On post-contrasted scans, the center does not enhance, although there is peripheral enhancement sagittal image 10 series 8. This is hyperintense to disc but does not enhance, and contributes to impingement of the RIGHT lateral recess of the thecal sac and nerve roots.

This is likely a recurrent or a new RIGHT paracentral herniation from L3-4. There is inferior extrusion into the RIGHT lateral recess.

Although there is extension toward L4-5, this appears to arise within the epidural fat and epidural venous plexus from the L3-4 disc space. In addition, there is progressive spondylosis with a disc bulge at L3-4.

This may account for the patient's symptoms on the RIGHT side.

L4-5: Severe spondylosis. Laminectomy, possible partial discectomy. There is osteophytic spurring but no residual or recurrent protrusion. There is still severe RIGHT and severe LEFT neural foraminal narrowing, AP diameter is now 17 mm, previously 8 mm.

On the prior study, there was edema within the LEFT L4 and greater L5 pedicles, and subtly at the RIGHT L4 pedicle. This edema persists but has decreased.

L5-S1: Laminectomy. Severe spondylosis. Severe neural foraminal narrowing. AP diameter of the canal, however, is now 14 mm, previously 6 mm.

IMPRESSION:

1. Right paracentral protrusion, with inferior extrusion at L3-4. This extends into the RIGHT lateral recess posterior to L4 with thecal sac and nerve root impingement. This is likely a new herniation at L3-4. There is some peripheral but no central enhancement of this protrusion.

2. Laminectomy L4-5. There is still neural foraminal narrowing but the canal stenosis has been relieved. No evidence of recurrent or residual protrusion.

3. L5-S1 laminectomy, with relief of the canal stenosis. Bilateral neural foraminal narrowing, no evidence of residual or recurrent protrusion.

PROCEDURE: MRI LUMBAR SPINE WITH AND WITHOUT CONTRAST

INDICATION: Low back pain, weakness, surgery 15 years ago.

COMPARISON: None.

TECHNIQUE: Standard protocol with and without contrast. 10 cc of Gadavist was injected.

FINDINGS:

There is slight rightward lumbar curvature. There is retrolisthesis of 4 mm at L5-S1, grade I anterolisthesis at L4-5, grade I anterolisthesis L3-4 and retrolisthesis at L2-3. Conus medullaris terminates at approximately L1. There are postoperative changes and paraspinous muscle edema greater on the LEFT. No compression fractures are seen. Abdominal aorta and IVC are normal caliber.

Counting is based on the assumption of 5 lumbar vertebrae.

T11-12: Minimal spondylosis and mild facet disease.

T12-L1: Minimal spondylosis and facet disease.

L1-2: Minimal spondylosis, mild facet disease.

L2-3: Retrolisthesis, laminectomy. There is moderate spondylosis, 3 to 4 mm bulge. There is facet hypertrophy into the neural foramina, with moderately severe LEFT and moderate RIGHT neural foraminal narrowing. AP diameter is 14 mm in midline. There is narrowing of the lateral recesses however.

L3-4: Grade I anterolisthesis. There has been a laminectomy. There is RIGHT-sided facet hypertrophy with a facet spur or complex facet synovial cyst projecting into the RIGHT lateral recess, 10 x 9 mm, 10 mm in CC dimensions. Series 2 image 6. There is impingement upon the thecal sac. There is moderate spondylosis, osteophytic spurring and severe RIGHT neural foraminal narrowing. Severe LEFT neural foraminal narrowing with nerve root impingement. AP diameter is 12 mm in midline, but off midline there is canal stenosis.

There is also a fluid collection at the LEFT facet measuring 7 mm on axial image 11, likely another facet synovial cyst, 11 mm on sagittal image 9. There is transverse canal stenosis measuring 8 mm at L3-4.

L4-5: Laminectomy. Grade I anterolisthesis. Moderately severe spondylosis, with osteophytic spurring greater on the RIGHT. Moderate to severe RIGHT and moderate LEFT neural foraminal narrowing. AP diameter is 16 mm. No canal stenosis.

L5-S1: Retrolisthesis, moderately severe spondylosis. This is greater on the LEFT and there is facet arthropathy. Moderate LEFT and mild-to-moderate RIGHT neural foraminal narrowing. There is a laminectomy, no canal stenosis.

On the post contrasted sagittal T1-weighted scan with fat suppression, there is some evidence of enhancement but this might be early, not enough to capture the entirety of enhancement. There is enhancement around the posterior elements at L3-4, some enhancement at the nerve roots at L3-4. There is no evidence of clumping of the nerve roots to suggest arachnoiditis however.

IMPRESSION:

1. Canal stenosis at L3-4, greatest in the transverse dimensions measuring 8 mm.

2. There is a laminectomy at L3-4 but there is facet hypertrophy and bilateral synovial cysts or spurs, more likely synovial cysts contributing to lateral recess and thecal sac stenosis. There is bilateral severe neural foraminal narrowing with grade I anterolisthesis.

3. Laminectomy at L2-3 with disc bulge and facet arthropathy, bilateral neural foraminal narrowing. No canal stenosis.

4. Laminectomy L4-5, no canal stenosis, RIGHT greater than LEFT neural foraminal narrowing.

5. Laminectomy L5-S1, LEFT greater than RIGHT neural foraminal narrowing. No canal stenosis. No arachnoiditis.

No evidence of any residual or recurrent protrusion, prior studies would be helpful however.

PROCEDURE: MRI THORACIC SPINE WITH AND WITHOUT CONTRAST AND MRI LUMBAR SPINE WITH AND WITHOUT CONTRAST

INDICATION: There has been a history of lumbar puncture. G97.0. Only surgical history available is that of ureter reimplantation. Postural orthostatic tachycardia syndrome.

TECHNIQUE: Standard protocol through the thoracic spine with and without contrast. Standard protocol through the lumbar spine with and without contrast.

CONTRAST: 6 cc of Gadavist was injected. 1.5 cc discarded.

NOTE: Motion limits evaluation.

FINDINGS:

There is a syrinx. This is a multisegmental syrinx in the thoracic spine.

The syrinx is first clearly visualized at the level of T3 and measures approximately 1 x 1 mm in the midline. Axial image 66, series 1101. This extends to the T3-4 disc space. The syrinx then fades at T4 and is visible again at T4-5 measuring less than 1 mm. At T5, the syrinx measures approximately 1 mm and extends for 11 mm to T5-6. It then is not visualized until the mid T7. At T7-8, the syrinx is largest, measuring 1.8 mm in greatest in the transverse dimensions, sagittal image 9 and axial image 41. This then tapers. The syrinx is again visualized at T9-10, measuring 1.6 mm in greatest AP and transverse dimensions. This tapers at T10.

There is a small central fluid collection in the midline at the conus, but this may represent a ventriculus terminalis, not a syrinx.

There is minimal spondylosis of the superior thoracic spine. At T3-4, there is a shallow 2-mm LEFT paracentral protrusion. There is a 2-mm LEFT paracentral protrusion at T4-5, best seen on axial image 59. There is disc desiccation at T5-6 and a 1-mm bulge. T6-7 shows disc desiccation and minimal spondylosis. T7-8, T8-9, T9-10, T10-11, T11-12 and T12-L1 appear normal.

The conus ends at T12.

With regard to the lumbar spine, there is minimal spondylosis and a few minimal bulges. Minimal facet arthropathy. There is no evidence of a tethered cord. No evidence of any fibrolipoma of the filum terminale. There is some respiratory motion. Abdominal aorta and IVC are normal.

Also of note, the LEFT renal vein is mildly flattened anterior to the aorta, although this is not a high-grade compression.

There is RIGHT hydronephrosis. There is a large RIGHT extrarenal pelvis measuring 20 mm and dilation of the RIGHT renal calyces. The RIGHT superior pole appears smaller than the LEFT; I suspect that there is some scarring. There appears to be duplicated RIGHT renal

collecting system with two ureters, axial image 26. There may also be a duplicated LEFT renal collecting system, although this is not certain.

There is no evidence of abnormal enhancement within the lumbar spine.

No evidence of abnormal enhancement within the thoracic spine. No evidence of enhancement of the syrinx.

Of note, there is severe narrowing of the celiac axis origin. Thoracic spine axial image 4, 5, 6 and 7. Sagittal images also show this thinning and narrowing of the celiac axis. The SMA is patent. There is either early division or two RIGHT renal arteries, with a single LEFT renal artery.

IMPRESSION:

1. Multisegmental cord syrinx from T3 through T10. The greatest diameter is slightly less than 2 mm, and some portions are tapered and near completely absent. Please see the above for details.

2. No evidence of tethered cord. The conus ends at T12.

3. There is thoracic spondylosis described above, with some shallow protrusions. There is also some mild epidural lipomatosis. There is no evidence of any cerebellar tonsillar ectopia, no cervical cord lesion, and no evidence of Arnold-Chiari malformation.

4. No abnormality of the lumbar spine can be seen.

5. Right renal duplicated collecting system, with evidence of probably scarring and atrophy in the upper pole and possible hydronephrosis. There may also be a LEFT renal duplicated collecting system, although there is no hydronephrosis and less convincing evidence for this.

6. Mild flattening of the LEFT renal vein, although no evidence of high-grade compression.

7. Please review the MRI thoracic spine. This patient reportedly has Ehlers Danlos syndrome. There is evidence of severe narrowing of the celiac axis origin and kinking. This is suggestive of median arcuate ligament syndrome. There is respiratory motion limiting evaluation, however. There is evidence of a duplicated or accessory RIGHT renal artery and possibly a duplicated LEFT renal artery, as well.

NOTE: Dr. Bard would be happy to discuss these findings with referring clinician.

PROCEDURE: MRI LUMBAR SPINE WITHOUT CONTRAST, MRI THORACIC SPINE WITHOUT CONTRAST

INDICATION: Unstable burst fracture L1. Six lumbar vertebrae. Motor vehicle accident November 2017.

COMPARISON: Chest CT without contrast 1/23/2018. Chest CT without contrast 12/28/2017. Chest CT without contrast 12/6/2017.

TECHNIQUE: Standard protocol through the thoracic spine. Standard protocol through the lumbar spine.

FINDINGS:

There is a burst fracture at L1 redemonstrated. This is confirmed by counting from skull base, C1 and C2, on the scout view. There are six lumbar-type vertebral bodies.

There is separation of the anterior portion of the fragmented fracture from the posterior portion, sagittal series 501 image 16. There is 3 mm retropulsion at the posterior and superior margin of the vertebra. There is no evidence of canal stenosis nor cord compression. Note that the conus terminates at L1, just inferior to this retropulsed fragment.

Fracture lines extend into the pedicles, bilateral, but with edema still on the RIGHT. There is no separation or widening of the pedicles.

No evidence of soft tissue component to this fracture.

There is a small amount of superior endplate edema at T2, T1 and C7. This is on the sagittal STIR sequence. There are also subtle compression fractures seen on the initial study, 12/28/2017, at these levels. These are superior endplate compression fractures. No retropulsion. The cervical spine is not evaluated well on this study.

There is rightward mid thoracic curvature and slight leftward superior thoracic curvature. Paraspinous soft tissues are normal.

Adrenals are normal. Left extrarenal pelvis. Thoracic aorta is normal caliber, mild ectasia. Thyroid appears normal.

LUMBAR SPINE:

T11-12: Normal.

T12-L1: Bilateral nerve sheath cysts, greater on the LEFT. Slight retropulsion 3 mm without cord compression due to the fracture. Mild spondylosis.

L1-2: Moderate spondylosis, greater on the RIGHT. 2 mm bulge and osteophyte. Slight retropulsion. The conus ends at this level.

L2-3: Anterior endplate edema, mild spondylosis, 2 mm bulge. Right side nerve sheath cyst. Mild facet disease.

L3-4: Mild spondylosis, 2 mm disc bulge, greater on the LEFT. Mild to moderate LEFT neural foraminal narrowing. No canal stenosis.

L4-5: Left posterolateral 3 to 4 mm protrusion, LEFT lateral and posterolateral annular tear. Moderate LEFT neural foraminal narrowing. Mild facet arthropathy.

L5-6: Mild spondylosis, 2 mm bulge, greater on the LEFT. Mild to moderate facet arthropathy. Mild neural foraminal narrowing.

L6-S1: Minimal spondylosis, mild facet disease. No compression.

Multiple nerve sheath cysts and small Tarlov cysts are present within the sacral spine, with mild enlargement of the sacral canal, probably incidental and of doubtful current clinical significance. Paraspinous soft tissues are preserved.

Visible aorta and IVC are normal caliber. Visible bowel is normal.

IMPRESSION:

1. L1 compression fracture with severe, greater than 90% central compression and fragmentation. 80-90% anterior compression. 50% posterior compression. The fracture does extend to the pedicles.

2. Retropulsion of 3 mm at L1. The conus ends at this level. No cord compression or canal stenosis.

3. Superior endplate mild compression fractures at C7, T1 and T2, with some residual endplate edema. No retropulsion.

4. There is LEFT side facet arthropathy and hypertrophy at T10-11, mild facet arthropathy at other levels. There is T8-9 2 mm protrusion, without canal stenosis.

5. Six lumbar vertebral bodies. This is confirmed by comparison with prior CT. The fracture is at L1 based on numbering from C2.

PROCEDURE: MRI LUMBAR SPINE WITHOUT CONTRAST

INDICATION: Low back pain, bilateral hip pain. No trauma. No surgery. Three to six months. Initial encounter.

COMPARISON: None.

TECHNIQUE: Standard protocol.

FINDINGS:

There is slight leftward curvature. Bone marrow signal is normal. Conus medullaris terminates at approximately L1. No compression fractures are seen. Paraspinous soft tissues are normal. Abdominal aorta and IVC are normal caliber.

Counting is based on the assumption of five lumbar vertebrae.

T11-12: Minimal spondylosis, mild to moderate facet arthropathy greater on the LEFT. No compression.

T12-L1: Normal.

L1-2: Minimal spondylosis.

L2-3: Mild spondylosis. 2 mm RIGHT paracentral protrusion flattening the thecal sac. No canal stenosis. Neural foramina are patent. Mild facet disease.

L3-4: Normal.

L4-5: Mild spondylosis. 2 to 3 mm LEFT posterolateral protrusion with minimal LEFT neural foraminal narrowing, sagittal image 4. Mild facet disease. No canal stenosis.

L5-S1: Normal.

The uterus is partially visualized, endometrium is approximately 2 mm.

IMPRESSION:

1. Mild spondylosis and 2 mm RIGHT paracentral protrusion at L2-3. Minimal flattening of the thecal sac.

2. 3 mm LEFT posterolateral protrusion with minimal LEFT neural foraminal narrowing at L4-5.

3. Mild multilevel facet disease. No canal stenosis.

PROCEDURE: MRI LUMBAR SPINE WITHOUT CONTRAST

INDICATION: Back pain. No trauma. No surgery. Six months.

COMPARISON: 11/13/2012.

TECHNIQUE: Standard protocol.

FINDINGS:
Lumbar spine is in anatomic alignment. Bone marrow signal is normal. Conus medullaris terminates at approximately L1. No compression fractures are seen. Paraspinous soft tissues are normal. Abdominal aorta and IVC are normal caliber.
Counting is based on the assumption of 5 lumbar vertebrae.

T11-12: Normal.

T12-L1: Normal.

L1-2: Normal.

L2-3: Minimal spondylosis, mild facet disease. Slight progression.

L3-4: Minimal spondylosis, mild to moderate facet disease. Slight progression.

L4-5: There is progressive disc space narrowing, measuring 6.5 mm in height at the posterior disc of L4-5 currently, previously 10.4 mm. There is progressive degeneration. There is moderate facet arthropathy, which has progressed. There is some intermediate signal within the disc, probably an annular fissure. Mild neural foraminal narrowing. No canal stenosis.

L5-S1: Mild spondylosis with a 2 mm disc bulge and LEFT posterolateral annulus fissure sagittal image 3. This annular fissure has enlarged. Mild facet arthropathy.

There is an S1-2 Tarlov cyst on the RIGHT, sagittal image 9, which has slightly increased in size, and measures 8 mm.

IMPRESSION:

1. Progressive narrowing and degeneration L4-5. Progressive disc bulge. Progressive facet arthropathy at L4-5. No canal stenosis.

2. Disc bulge and LEFT posterolateral annular fissure at L5-S1 which has shown mild progression.

3. Minimal and mild spondylosis and facet arthropathy at other levels, showing slight progression since 2012. No canal stenosis. The main portion of progressive disease is at L4-5.

PROCEDURE: MRI CERVICAL SPINE WITH AND WITHOUT CONTRAST; MRI THORACIC SPINE WITH AND WITHOUT CONTRAST

INDICATION: Myelopathy. No reported history of trauma. Initial encounter.

COMPARISON: None.

TECHNIQUE: Standard protocol through the cervical spine with and without contrast. Standard protocol through the thoracic spine with and without contrast. Creatinine is 0.7. 7.5 cc Gadavist was utilized. 0 cc was discarded.

FINDINGS:

In summary, there is a 32 mm mass within the conus medullaris, an intramedullary mass with diffuse enhancement and thickening and enhancement of the nerve roots.

Cervical spine is in anatomic alignment. Bone marrow signal is normal. Prevertebral and paraspinous soft tissues are normal. Cerebellar tonsils are within limits of normal. No cord lesion is seen.

C1-2: Mild degenerative change.

C2-3: Minimal spondylosis and mild facet arthropathy.

C3-4: Mild spondylosis, moderate facet arthropathy greater on the LEFT moderate LEFT and mild RIGHT neural foraminal narrowing.

C4-5: Mild spondylosis, mild facet arthropathy, mild neural foraminal narrowing. No canal stenosis.

C5-6: Moderate spondylosis. Endplate edema. 3 mm central and LEFT paracentral protrusion and osteophyte. Moderate RIGHT facet arthropathy, mild on the LEFT. Moderate to severe LEFT, mild to moderate RIGHT neural foraminal narrowing. There is ligamentum flavum thickening or infolding, AP diameter is 8 mm.

C6-7: Moderate spondylosis. 3 mm LEFT paracentral protrusion, extending superiorly and flattening the thecal sac. AP diameter is 9 mm. Slight flattening of the LEFT side of the thecal sac. Mild to moderate facet arthropathy and neural foramina are patent. Flattening of the thecal sac, no canal stenosis.

C7-T1: Mild spondylosis and moderate facet disease.

T1-T2: Mild spondylosis.

T2-3: Minimal spondylosis and mild to moderate facet arthropathy greater on the LEFT.

On post-contrasted scans, there is no abnormal enhancement within the superior thoracic spine nor of the cervical spine. Major salivary glands appear normal.

MR thoracic spine with and without contrast: There is a mild thoracic kyphosis and multilevel moderate spondylosis. There multiple Schmorl's nodes throughout the thoracic spine, and ligamentum flavum thickening greatest at T2-3. There is a hemangioma at T1.

There is facet arthropathy greatest at T2-3 followed by T3-4. There also is facet arthropathy and hypertrophy at T9-10 and T10-11, and at T12. The conus ends at L1-2. Visible thoracic aorta is ectatic but there is no aneurysm. Visible adrenals appear normal.

There are multilevel endplate Schmorl's nodes and multilevel mild spondylosis.

There is a cord lesion beginning at T6-7. There is central hyperintensity within the cord measuring 3.4 mm, and the central margin expands until it measures 5 x 5 cm. This 5 x 5 cm central expansion of the cord extends from T6-7 through the conus at L1-2. There is some expansion of the cord.

There is an enhancing mass within the cord at L1. This measures 32 x 11 mm CC and AP dimensions, 7 mm in transverse dimensions. This is at the conus. No other abnormal enhancing lesion in the cord is seen.

There is some enhancement of the nerve roots distally and some mild enhancement along anterior and posterior margins of the thoracic spine, which might represent some neuritis or vessels.

There is thickening of the nerve roots in the lumbar spine extending from the cauda equina distally.

There is grade 1 anterolisthesis with pars defects at L4, and canal stenosis at L5-S1 and L3-4.

IMPRESSION:

1. Enhancing intramedullary, conus medullaris mass, 32 x 11 x 7 mm, at the pelvis, at L1. There is no evidence of calcifications, no abnormal flow voids, mild enhancement proximal to this, and a syrinx extending proximally to T7. This is mildly hyperintense on T2-weighted scans.

2. There is distal enhancement and thickening of the nerve roots.

3. There is multilevel spondylosis and facet arthropathy thoracic spine, but the main findings are likely within the cord. No cord compression.

4. Post-contrasted scans through the cervical spine are limited by artifact, there is no mass or enhancement or mass, however.

5. Primary considerations in this region are ependymoma, neurofibroma, or metastatic disease. The presence of enhancing thickened nerve roots, without any evidence of flow voids or T2 hyperintensity suggests possible metastatic disease. Lymphoma would be darker on T2-weighted scans in general. Therefore, there can be unusual primitive neuroectodermal tumor (PNET) or a small, less likely primary neoplasm. Metastatic disease is considered very likely.

6. MRI of the brain is recommended with and without contrast including fat-suppressed post-contrasted scans. Lumbar puncture may be necessary depending on results of the brain. Review of the clinical notes shows no reported history of malignancy. MRI lumbar spine is dictated separately.

PROCEDURE: MRI THORACIC SPINE WITHOUT CONTRAST

INDICATION: Back pain, sciatica to the RIGHT lower extremity to the big toe. No trauma, no surgery.

COMPARISON: None.

TECHNIQUE: Standard protocol without contrast through the thoracic spine.

FINDINGS:

There is a slight leftward curvature of the lumbar spine on the scout view; the thoracic spine is in anatomic alignment. No compression fractures are seen. Bone marrow signal is normal. Paraspinous soft tissues are normal. No evidence of thoracic aortic aneurysm. There is some mild thickening of the distal esophagus, no evidence of any large hiatal hernia. Visible adrenals and visible kidneys appear normal.

No cord lesion can be seen.

Cerebellar tonsils are not visible on the scout views.

C7-T1: Normal disc, mild facet disease. No compression.

T1-2: Normal, mild facet disease.

T2-3: Minimal spondylosis.

T3-4: Minimal spondylosis.

T4-5: Minimal spondylosis.

T5-6: Minimal spondylosis.

T6-7: Minimal spondylosis. Mild facet arthropathy. No compression.

T7-8: Minimal spondylosis and facet disease.

T8-9: A 2-mm RIGHT paracentral protrusion or osteophyte, slightly flattening the thecal sac, no cord compression. No cord lesion. Minimal to mild facet disease.

T9-10: Mild spondylosis with some fatty endplate changes. There is moderate facet arthropathy and facet hypertrophy with a tiny synovial cyst in the LEFT ligamentum flavum and some fluid in the facets bilaterally. This is on axial image 36 series 8. Neural foramina are patent, however.

T10-11: Mild spondylosis. There is osteophytic spurring and moderate facet arthropathy with ligamentum flavum thickening, slightly greater on the LEFT but bilateral. There is a 1-mm bulge. Neural foramina are patent.

T11-12: Normal. Minimal facet disease.

T12-L1: The conus ends at this level. Normal.

L1-2: Minimal spondylosis with 1-mm bulge.

L2-3: Covered on the sagittal images, a 1-2 mm bulge, minimal neural foraminal narrowing.

IMPRESSION:

1. A 2-mm RIGHT paracentral protrusion at T8-9 without cord compression.
2. There is facet arthropathy of the inferior thoracic spine, greatest at T9-10 but also at T10-11.
3. No evidence of canal stenosis. No evidence of cord lesion. The conus ends normally at L1.
4. No paraspinous soft tissues. No compression fractures. No evidence of visible thoracic aortic aneurysm.

NOTE: Dr. Bard would be happy to discuss these findings with the referring clinician at your convenience. Dr. Bard will be happy to review any prior studies, including previous lumbar spine MRIs, if available.

PROCEDURE: **MRI OF THE LEFT ELBOW WITHOUT CONTRAST.**

INDICATION: M25.522. Acute left elbow pain after working out. No trauma. Post surgery to the LEFT elbow in 2000 after fracture.

COMPARISON: None.

TECHNIQUE: Multiplanar MRI through the LEFT elbow was performed. No contrast was administered.

FINDINGS:

BONES:

There is no evidence of radial head or neck fracture. There is minimal endosteal edema within the proximal radial diaphysis, likely from subtle biceps tendinosis at the insertion, but no fracture. There is also an incidental bone island.

There is a small amount of edema within the anterior coronoid process, with mild narrowing and spurring at the medial compartment. No fracture.

There is edema at the posterior margin of the medial condyle, axial image 26. No fracture. There is some mild T2 hyperintensity within the ulnar nerve in the cubital tunnel; no evidence of any crowding or injury. No subluxation.

LIGAMENTS:

The anterior band of the medial collateral ligament is intact. There is some intermediate signal within the posterior band at the margin of the medial epicondyle, however, possibly a partial tear at the proximal posterior band. The insertion of the subglottic tubercle, however, is intact.

Radial collateral ligament shows some mild thickening but is intact. The lateral ulnar collateral ligament is intact.

MUSCULATURE:

There is extensive muscular injury.

There are partial tears of the origins of the common extensor tendon, as well as the extensor carpi radialis longus muscle and extensor carpi radialis brevis muscle. There is also a partial intrasubstance tear of the brachioradialis muscle, axial image 29. This is greater at the proximal humeral portion. There is a partial tear with fluid along the undersurface of the common extensor tendon and within the fascia between the supinator and the common extensor musculature and

the region of the radial nerve. There is edema surrounding the radial nerve and the neurovascular bundle.

There is brachialis muscle partial tearing, with edema and subtle partial intrasubstance tearing of the proximal muscle. There is a small partial tear at the brachialis myotendinous junction, axial image 37. There is edema surrounding the tendon and a partial tear at the insertion, as well, axial image 15. There is also a partial muscular tear at the insertion, image 16.

There is partial tear of the common flexor tendon with subtle avulsion at the flexor carpi radialis origin, axial image 24.

BICEPS TENDON:

The biceps myotendinous junction is intact and spared from the edema. The lacertus fibrosus is torn along the margin of the biceps tendon, with edema extending into the fascial planes and surrounding the neurovascular bundles. The insertion of the biceps tendon is overall preserved but for a small amount of fluid along the anterior and slightly distal aspect of the insertion, axial image 13. This is in the region where the short head biceps tendon inserts, and may represent some tendinosis and subtle tearing in this region. There also is endosteal edema within the radial tuberosity, suggesting a very subtle avulsion of the biceps tendon at the insertion. This can also be seen coronal image 20.

IMPRESSION:

1. Extensive muscular injury of the LEFT elbow flexor compartments.

2. Partial tear common extensor tendon origin at multiple muscles attached. Please see the above for detailed discussion.

3. Partial tear flexor carpi ulnaris origin and partial tear common flexor tendon origin. Edema within the medial epicondyle, no fracture.

4. Extensive brachialis muscle injury proximal and distal to the joint. This includes the myotendinous junction and insertion. No complete tear. No evidence of hematoma.

5. Biceps tendon myotendinous junction and tendon itself are overall intact. There is a tear of the lacertus fibrosus. There is also subtle tendinosis and partial tearing at the anterior portion of the biceps insertion on the radial tuberosity. There is secondary evidence of this, as there is some edema within the radial tuberosity in this region. There is no fracture, however.

6. No evidence of fracture.

NOTE: Dr. Bard contacted the referring clinician 6:59 PM.

PROCEDURE: **MRI OF THE LEFT SHOULDER WITHOUT CONTRAST**

INDICATION: Motor vehicle accident two months ago, persistent LEFT shoulder pain and limited range of motion. Acute trauma. No surgery. This is a STAT report.

COMPARISON: None

TECHNIQUE: Multiplanar MRI through the LEFT shoulder was performed without contrast.

FINDINGS:

Rotator cuff: There is a full-thickness tear of the supraspinous tendon extending from the insertion through the critical zone. Sagittal images 6, 7, 8, and 9, coronal image 17.

There is a full-thickness infraspinatus tear with tendon retraction to the acromion. There is fluid in the subacromial and a small amount in the subdeltoid bursa. There is narrowing of the acromiohumeral distance and mild superior subluxation of the humeral head.

There is subscapularis tendinopathy and partial intrasubstance and bursal surface tearing near the insertion.

The teres minor is intact. However, there is evidence of some fatty replacement, atrophy, and edema within the teres minor muscle. Coronal image 3 on series 4 and series 6. The inferior aspect and posterior aspect of the infraspinatus muscle also shows this.

These findings are suggestive of axillary neuropathy and possible quadrilateral space syndrome.

Glenohumeral joint: Mild superior subluxation of the humerus. Moderate glenohumeral joint arthrosis. There is also posterior subluxation on axial images. There is grade II chondromalacia within the central aspect of the glenoid, without erosions. There is also a large joint effusion, with evidence of some debris and septations within the joint capsule.

Labrum, rotator cuff interval, and long head biceps tendon:

Rotator cuff interval is torn. Superior glenohumeral ligament is partially torn. Coracohumeral ligament is partially torn. There is fraying and a partial tear at the biceps labral complex and some fraying and partial tearing within the proximal long head biceps tendon, sagittal images 17 and 18. The long head biceps tendon is intact, but is superficially and medially subluxed near the bicipital groove, external to the subscapularis, axial image 8. Distal to this, the long head biceps tendon is within the bicipital

This is consistent with a proximal and distal rotator interval injury.

The superior labrum shows a subtle truncation and some intermediate signal along the undersurface, extending posterior. The anterior labrum is also truncated and frayed, and the superior glenohumeral ligament is torn from its usual position and located partially in the joint, axial image 14. Anterior inferior glenoid and labrum show truncation, with evidence of a tear. Posterior labrum is intact. The inferior labrum is partially torn.

Inferior glenohumeral ligament/capsule: Anterior band of the inferior glenohumeral ligament is intact. There is some subtle irregularity along the posterior band and junction with the labrum. The midportion of the capsule is preserved. The humeral insertion is intact. Axillary recess does have a normal contour.

The axillary recess itself shows no evidence of any lymphadenopathy nor large mass.

AC joint: Severe hypertrophy, edema and spurring, anterior downsloping of the acromion which is a type II, curved undersurface. This can be a clinical source of impingement. No evidence of shoulder separation. There is some thickening and intermediate signal within the conoid portion of the coracoclavicular ligament, but overall the common and trapezoid components are preserved. No evidence of shoulder separation.

Musculature: There is some limitation by fat suppression artifact. There is some edema within the lateral and posterior deltoid muscle head, probably muscular strain or acute injury. No evidence of any high-grade partial tear or hematoma. The rest of the surrounding musculature except where described above appears intact.

IMPRESSION:

1. Full-thickness supraspinatus tendon tear with retraction.
2. **Full-thickness infraspinatus tendon tear with retraction.**
3. **Partial subscapularis tear.**
4. **Edema and fatty replacement within the teres minor. This suggests neuropathy, most likely axillary neuropathy. Quadrilateral space syndrome is suspected, and this can be due to a variety of factors including impingement of the axillary nerve, capsule disruption, and muscular injury involving along the inferior aspect of the glenoid.**
5. **Rotator interval tear. Long head biceps tendon partial tear and proximal subluxation.**
6. **Biceps labral complex tear. Complex labral tear, posterior superior labrum and also anterior inferior labrum.**

PROCEDURE: **MRI OF THE LEFT WRIST WITHOUT CONTRAST**

INDICATION: Left wrist pain, three months. Football injury. Acute trauma. Unspecified sprain of left wrist, initial encounter, S63.502A.

COMPARISON: None.

TECHNIQUE: Multiplanar MRI through the LEFT wrist was performed.

FINDINGS:

There is a scapholunate ligament tear. There is widening of the scapholunate articulation. There is a tear of the scapholunate ligament on coronal image 12 series 9. There is some fluid signal in the scapholunate ligament articulation.

The capitolunate angle is enlarged, approximately 33 degrees. This indicates dorsal intercalated segmental instability.

There is some edema along the radial growth plate, and a subtle Salter-Harris type I injury is possible. There is also a small sub centimeter fluid collection along the palmar aspect of the distal radius, coronal image 6, axial image 7. This may represent a small ganglion cyst.

There is a small amount of edema at the distal and lateral aspect of the scaphoid but no fracture. There is some edema within a few of the other carpals, but this is minimal and no fractures are seen. No other malalignment.

There is a small amount of fluid in the distal radioulnar joint, but the triangular fibrocartilage is preserved. Ulnar meniscal homologue is intact. There is extensor carpi ulnaris tenosynovitis and mild tendinosis but no tear.

The rest of the extensor tendons are preserved. Listers tubercle is intact.

Carpal tunnel is preserved. The triquetral and pisiform are intact.

There is some mild thickening and intermediate signal at the anterior volar oblique ligament with slight lateral subluxation at the thumb carpometacarpal joint. This may be related to degeneration or other trauma.

Intrinsic musculature is preserved.

IMPRESSION:

1. Scapholunate ligament injury with widening of the scapholunate articulation.

2. Dorsal intercalated segmental instability (DISI). Capitolunate angle is increased.

3. Small ganglion cyst at the palmar aspect distal radius. Edema at the radial growth plate, it is possible there is subtle Salter-Harris type I injury. I suspect that this is a Salter-Harris injury at the distal radius.

4. The ulnar carpal and triangular fibrocartilage regions are preserved.

5. This patient would benefit from an MR arthrogram. Specifically, this patient would benefit from an MR arthrogram to evaluate scapholunate ligament, and any other associated injuries. Appropriate specialty consultation is also recommended.