AMSER Case of the Month January 2023

Spinal Cord Lipoma Diagnosis and Management

Faraz Farzad, University of Virginia School of Medicine

Dr. Tanvir Rizvi, University of Virginia Health System

UVA Health

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Patient Presentation

- 29 year old female presents to neurosurgery clinic complaining of years of progressive **low back pain with radiculopathy** and new onset of **intermittent urinary incontinence** over the past 6 months.

- On exam, patient has exaggerated lumbar lordosis with no tenderness to palpation or palpable dysraphism. Reflexes are 2+ and symmetric throughout. Strength is full and sensation to light touch is intact in the bilateral lower extremities.

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 3: **Subacute or chronic low back pain with or without radiculopathy. Surgery or intervention candidate with persistent or progressive symptoms during or following 6 weeks of optimal medical management. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
MRI lumbar spine without IV contrast	Usually Appropriate	O
Radiography lumbar spine	May Be Appropriate	☢☢☢
MRI lumbar spine without and with IV contrast	May Be Appropriate	O
Bone scan whole body with SPECT or SPECT/CT complete spine	May Be Appropriate	☢☢☢
CT lumbar spine without IV contrast	May Be Appropriate	☢☢☢
CT myelography lumbar spine	May Be Appropriate	☢☢☢☢
MRI lumbar spine with IV contrast	Usually Not Appropriate	O
CT lumbar spine with IV contrast	Usually Not Appropriate	☢☢☢
Discography and post-discography CT lumbar spine	Usually Not Appropriate	☢☢☢
CT lumbar spine without and with IV contrast	Usually Not Appropriate	☢☢☢☢
FDG-PET/CT whole body	Usually Not Appropriate	☢☢☢☢

This imaging modality was ordered by the neurosurgeon

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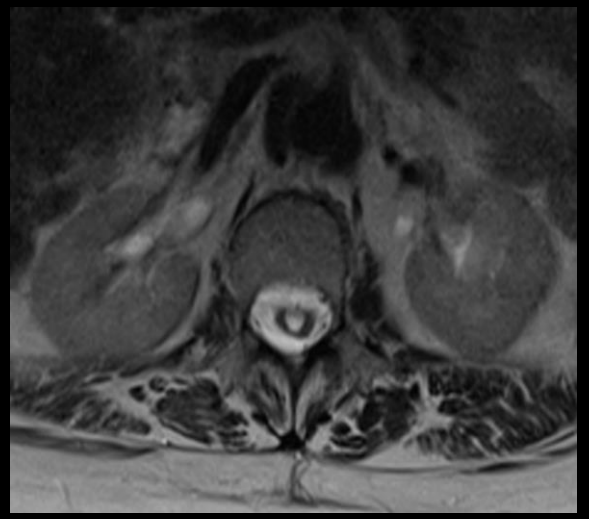
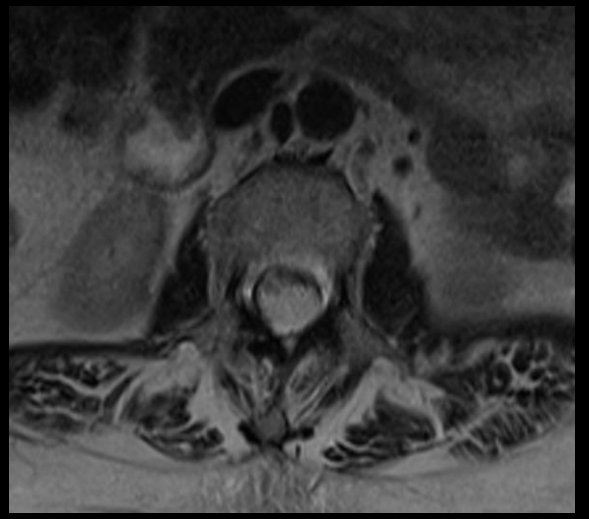
Findings (unlabeled)

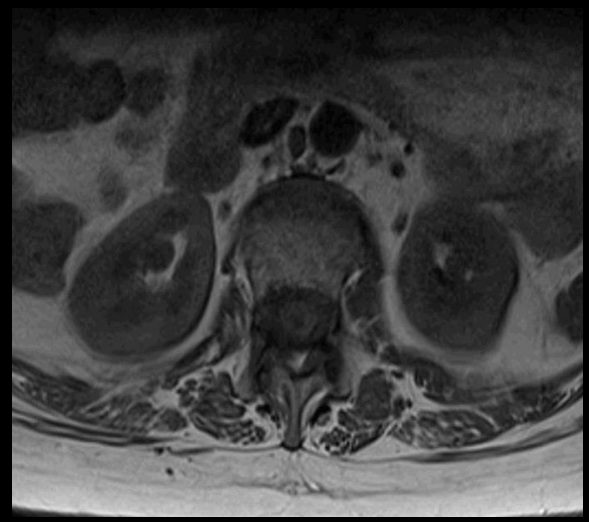
Sagittal T1
sequence MRI

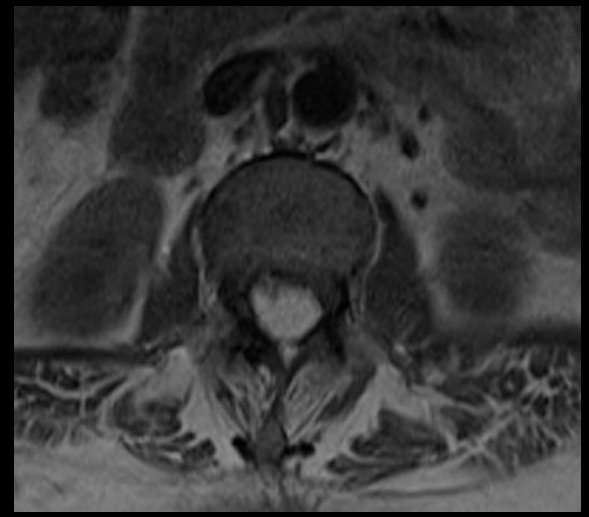
Sagittal T2
sequence MRI





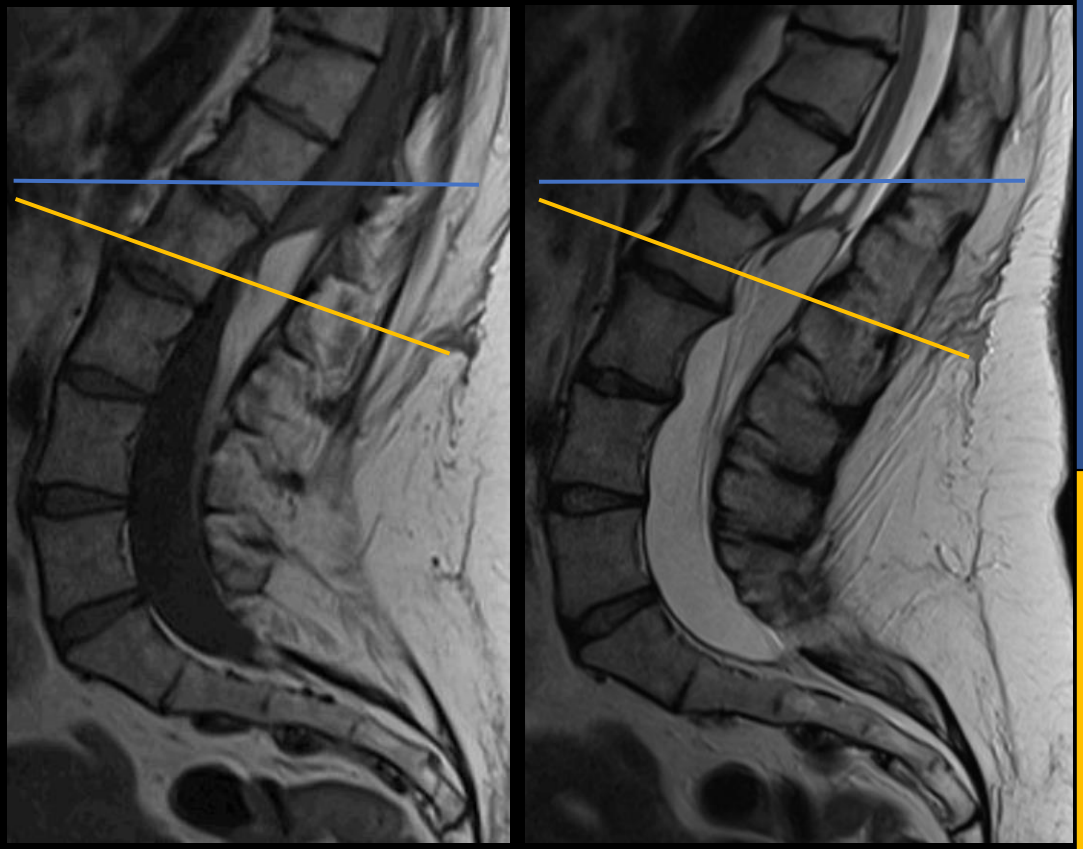
Axial T2
sequence MRI



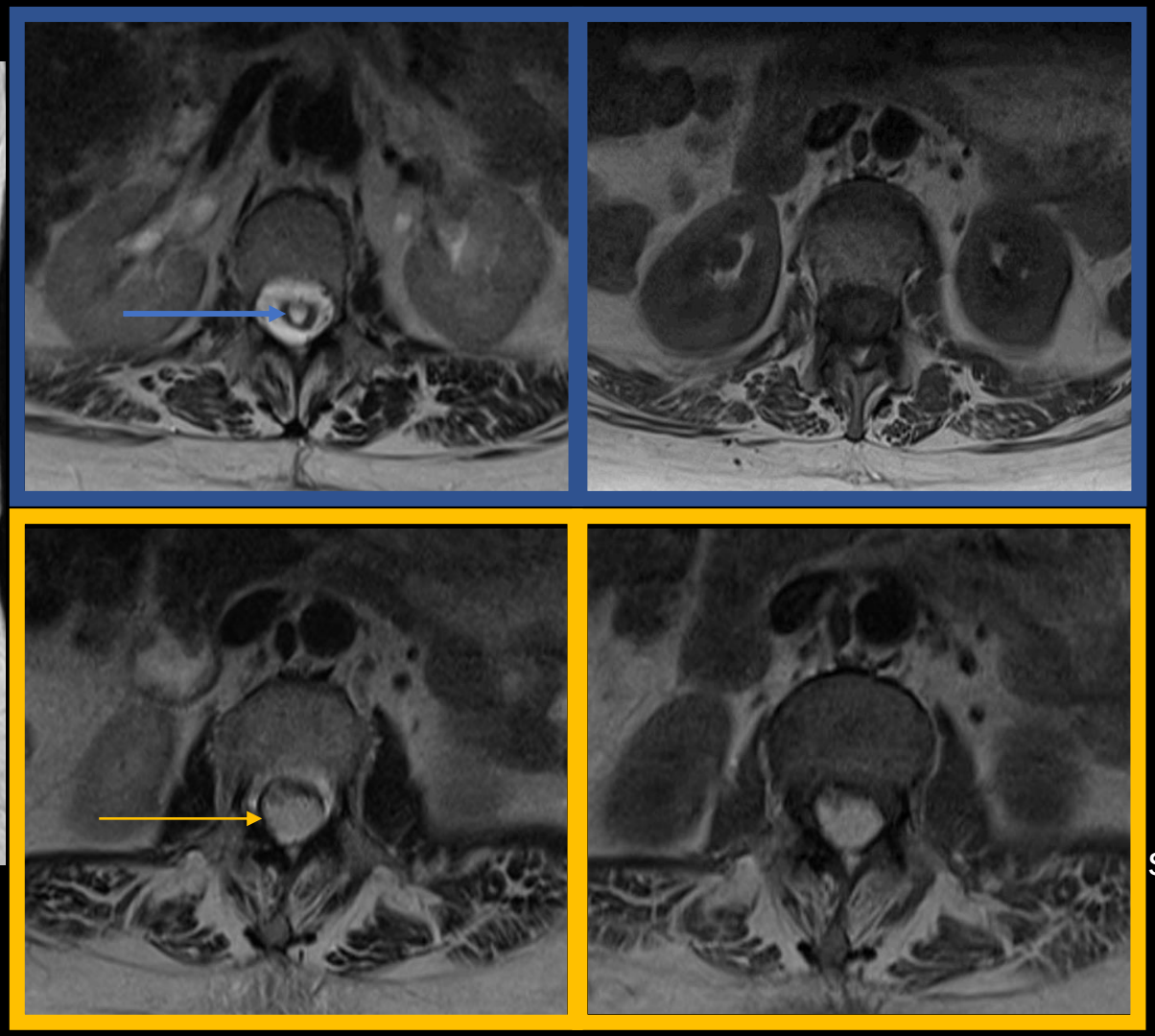


Axial T1
sequence MRI

Findings (labeled)



The conus medullaris terminates in a large intradural lipoma



Terminal expansile syringomyelia

The lipoma nearly fills the canal at L1-L2

The cauda equina is splayed around the lipoma

Dx:

Large intradural lipoma with associated expansile syringomyelia

Case Discussion

- Spinal cord lipoma is known to be a progressive disease, with clinical deterioration occurring in 40% of asymptomatic patients within a decade.
- In our patient with progressing symptoms, we can consider surgical management vs conservative management.
- Surgical management has traditionally been reserved for relief of severe symptoms.
  - Median time to neurological deterioration in as little as 19 months post-operatively

Further Imaging

- The diagnosis of spinal cord lipoma can be confirmed with fat saturation or STIR sequence MRI.
  - These chemically selective pulses cause the signal from fat to be nulled (saturated) while the water signal is relatively unaffected

Classification

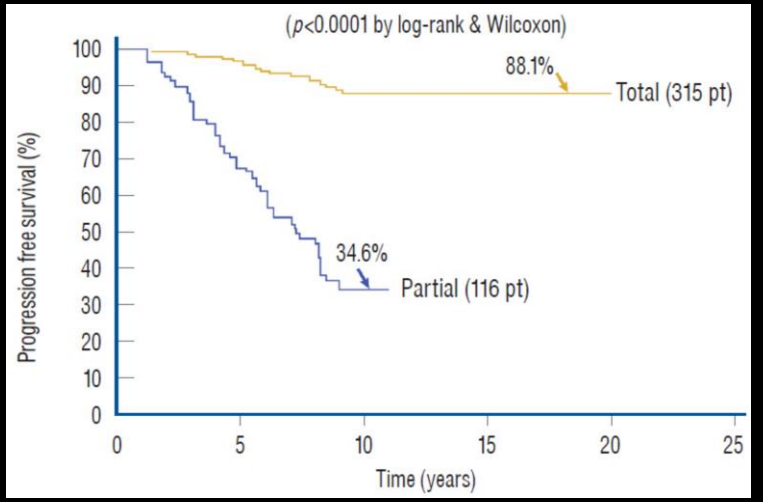
- Pang et al. created a classification system for spinal cord lipomas in 1995. Morota et al. proposed a new classification system in 2017.
  - Consider extent of anatomical involvement of the lipoma
  - Good prognostication tool

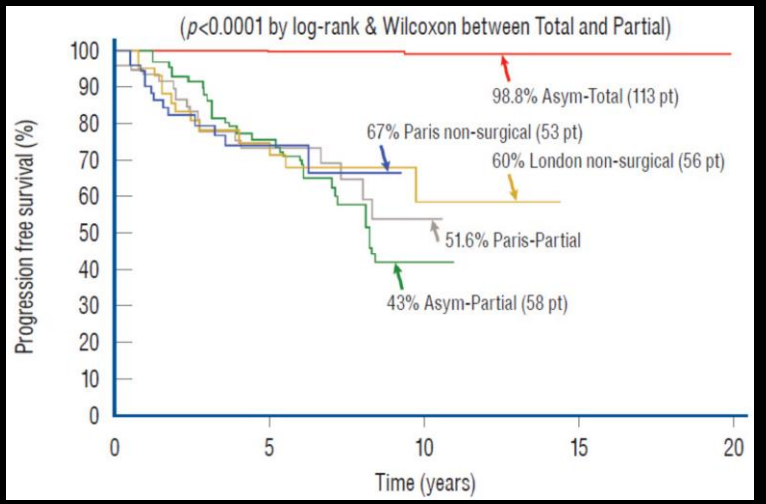
Our patient had a Transitional (Type 1) lipoma

Pang's	Morota's	Description
Dorsal	Type 1	Only involves the dorsal spinal cord; conus medullaris is intact
Transitional	Type 1	Involves the dorsal spinal cord; cuts obliquely to involve the conus medullaris
Chaotic	Type 2	Involves the dorsal and ventral cord, with intertwined fat and neural tissue
Terminal	Type 3	Only involves the conus medullaris with potential minimal involvement of the caudal spinal cord
Terminal	Type 4	Only involves the filum terminale, with an intact conus medullaris

Management

- Management of spinal cord lipomas has recently been a controversial topic in the literature.
- Management was traditionally *partial* resection.
  - Resulted in early recurrence, with median post-operative time to neurological deterioration reported around 20 months.
- Recently, Pang et al. reported near resolution of symptoms with minimal recurrence after *total* resection of lipomas.
  - 98.8% progression free survival at 20 years post-operation after total resection vs quick deterioration after partial.





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