Spinal Tumors

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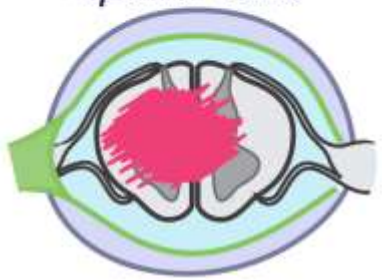
Classification

By location:

- **Extradural (55%)** – often metastatic
- **Intradural extramedullary (40%)** – e.g., meningioma, schwannoma
- **Intramedullary (5%)** – e.g., ependymoma, astrocytoma

Spinal Cord Tumors

Intramedullary
Spinal cord



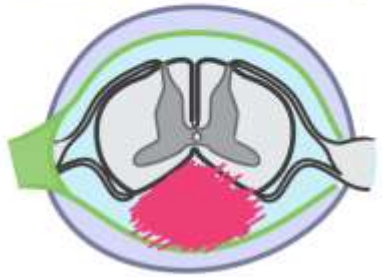
Ependymoma

Astrocytoma

Hemangioblastoma

Metastases
Lung
Breast
Melanoma

Intradural
Extramedullary

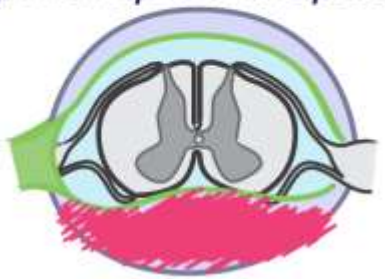


Peripheral Nerve Sheath Tumors
Schwannoma
Neurofibroma

Meningioma

Filum Ependymoma

Extradural
Extramedullary
Spine /Epidural space



Metastases

Common	*Less common*
Breast	Renal Cell
Prostate	Myeloma
Lung	Lymphoma

Chordoma

Sarcoma

By Origin:

- **Primary: Meningioma, Astrocytoma, Epindymoam, Schwannoma**(benign/malignant)
- **Secondary** (metastases)

Clinical Presentation

- Localized back pain (especially nocturnal)
- Radicular pain (dermatomal)
- Motor weakness, spasticity
- Sensory deficits
- Gait disturbances
- Bowel/bladder dysfunction
- Red flags: Rapid progression, saddle anaesthesia, urinary retention, motor weakness, sexual dysfunction)

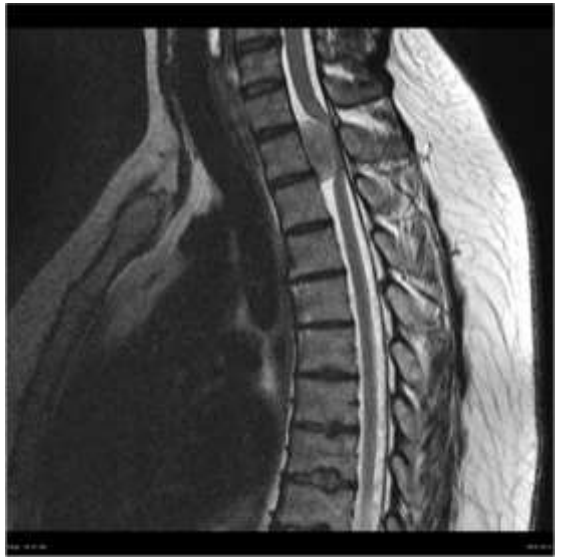
Diagnostic Workup

- **History + neurologic exam**
- **MRI with gadolinium** = gold standard
- CT scan (for bone detail)
- Plain X-ray (limited value)
- **Biopsy** for tissue diagnosis (image-guided or surgical)

Tumor Type	Location	Common in	Nature	Prognosis
Meningioma	Intradural-extramedullary	Middle-aged women	Benign	Excellent if resected
Schwannoma	Intradural-extramedullary	Any age; NF2 assoc.	Benign	Excellent
Ependymoma	Intradural-Intramedullary	Adults	Benign (WHO I-II)	Good with surgery
Astrocytoma	Intradural-Intramedullary	Children	Variable (I-IV)	Depends on grade
Metastasis	Extradural	Older adults	Malignant	Variable; palliative care often needed

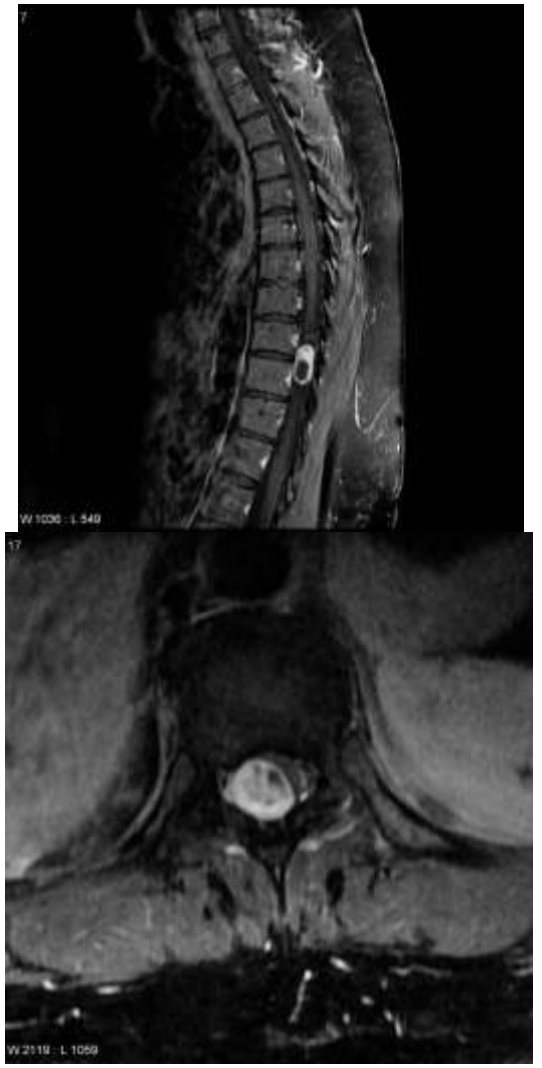
Meningioma

- **Location:** Intradural-extramedullary (thoracic spine most common)
- **Histology:**
  - Whorled pattern of spindle cells
  - Psammoma bodies
  - EMA positive on immunostaining
- **Behavior:**
  - Usually slow-growing and benign (WHO Grade I)
  - Female predominance, linked to estrogen receptors
- **Treatment:**
  - Surgical resection is often curative
  - Radiotherapy rarely needed unless recurrence
  - **Prognosis:** Excellent with gross total resection

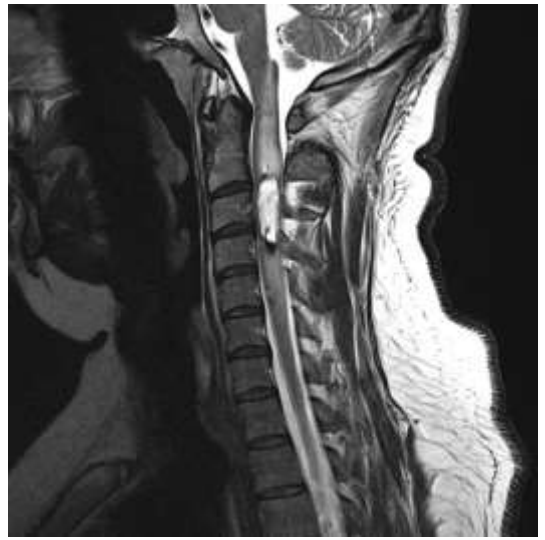


Schwannoma (and Neurofibroma)

- **Location:** Intradural-extramedullary (often cervical/lumbar)
- **Histology:**
- Biphasic pattern (Antoni A and B areas)
- Verocay bodies (in Antoni A)
- S-100 positive
- **Clinical Notes:**
- May present with radicular pain
- Isolated or multiple in Neurofibromatosis type 2
- **Treatment:** Surgical resection (often curative)
- **Prognosis:** Excellent; recurrence is rare if completely removed

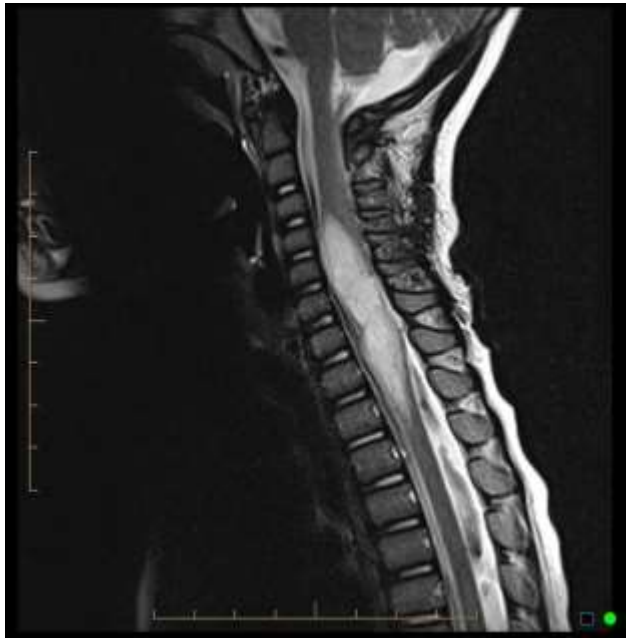


Ependymoma



- **Location:** Intramedullary (especially cervical spine)
- **Histology:**
  - Rosette or pseudorosette formation
  - GFAP positive
  - WHO Grade I (myxopapillary), II, or rarely III (anaplastic)
- **Special Type:** Myxopapillary ependymoma – typically conus/filum terminale
- **Symptoms:** Gradual motor/sensory, sometimes sphincter issues
- **Treatment:** Surgical resection ± radiotherapy for higher grades
- **Prognosis:** Good for Grades I–II, guarded for Grade III

Astrocytoma



- **Location:** Intramedullary (often thoracic in children)
- **Histology:**
  - Diffuse infiltrative pattern
  - GFAP positive
  - Graded I-IV (pilocytic to glioblastoma)
- **Clinical Course:**
  - More infiltrative than ependymomas → harder to resect
- **Treatment:** Surgery (limited resection) ± radiation/chemotherapy
  - High-grade tumors may behave aggressively
- **Pediatric Focus:** Most common spinal cord tumor in children
- **Prognosis:** Variable; poorer for high-grade tumors

- **Metastatic Tumors**
- **Location:** Extradural (vertebral body → epidural space)
- **Common Primary Cancers:**
  - Breast, Lung, Prostate, Kidney, Thyroid, Myeloma
- **Histology:** Depends on primary source
- **Signs:** Back pain, neurologic deficits (cord compression)
- **Diagnosis:**
  - MRI spine + workup for primary cancer
  - Biopsy if unknown origin
- **Treatment:**
  - High-dose corticosteroids (dexamethasone)
  - Radiation therapy (e.g., SBRT)
  - Surgical decompression (esp. if unstable spine)
  - ● **Prognosis:** Palliative intent; goal is neurologic preservation and quality of life

Grade	Description	Example Tumors
I	Benign, slow-growing	Pilocytic astrocytoma, Myxopapillary ependymoma
II	Low-grade, may recur	Diffuse astrocytoma, Ependymoma
III	Malignant, anaplastic	Anaplastic ependymoma, anaplastic astrocytoma
IV	Highly malignant	Glioblastoma

Management

- **Corticosteroids** (e.g. dexamethasone) for cord edema
- **Surgical decompression** if neurologic deficits
- **Radiotherapy** – especially for metastases
- **Chemotherapy** – selected tumors (e.g. lymphoma)
- Multidisciplinary team: Neurosurgery, Oncology, Radiology

Emergencies

- **Spinal cord compression**
  - Requires urgent MRI
  - Treat with steroids + surgical/radiation consultation
- **Cauda equina syndrome**
  - Saddle anesthesia
  - Urinary retention
  - Immediate neurosurgical referral

- 55-year-old male with lung cancer presents with new thoracic back pain, urinary incontenance and leg weakness.
  MRI shows an extradural mass compressing the cord.
- **Question:**
  What is the likely diagnosis?
  What are the next steps in management?

Key Takeaways

- Most spinal tumors are **metastatic and extradural**
- **MRI with contrast** is the key diagnostic tool
- **Neurologic deficits** = urgent referral
- Early recognition prevents **permanent disability**