

Tumors of the Spine

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Spine Tumors

- Victor Horsley is credited with first successful removal of spinal cord tumor in 1887 (IDEM)
- Patient was a Captain in the British army
- Surgery done in semiprone position under ether anesthesia
- Regained ambulation post operatively

Spine Tumors

- General Information, Symptoms
- Spinal Compartments
- Survey of Spine Tumors
 - emphasis on primary tumors
 - emphasis on more common tumors
- “Aunt Minnie” pictures

General Information

- 15% of CNS tumors are intraspinal
- Most primary intraspinal tumors are benign (vs intracranial tumors)
- Most patients have symptoms for 2 years prior to diagnosis
- Most intraspinal tumors present by compression rather than invasion

Compression Syndromes

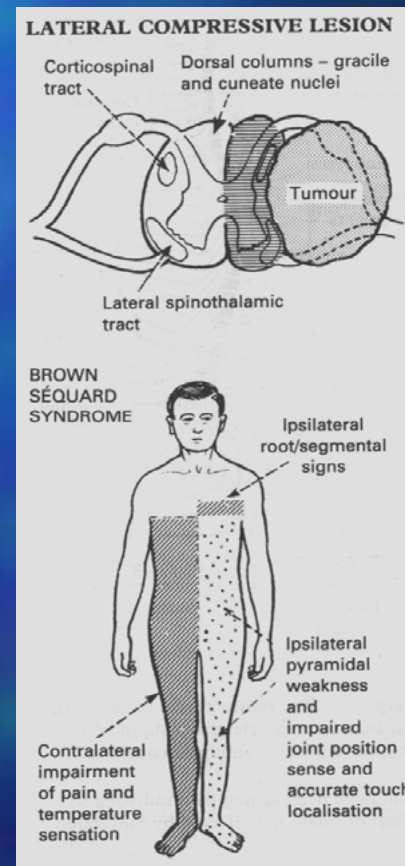
- Root
 - severe, sharp, shooting pain with weakness or numbness in distribution of root (radicular)
- Bone
 - continuous dull pain and tenderness
 - may not be relieved by rest

Compression Syndromes

- Anterior
 - bilateral weakness, dissociated sensory loss (loss of pain and temperature, retained position sense, pressure, vibration)
- Posterior
 - rare, produces paresthesias, impaired posterior column function

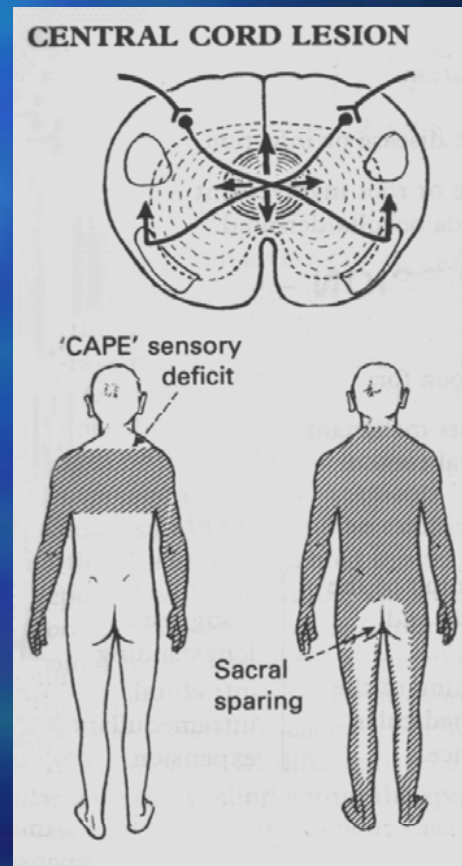
Compression Syndromes

- Lateral
 - aka Brown Sequard
 - contralateral loss of pain and temperature 1-2 segments below injury
 - ipsilateral loss of posterior column function and weakness
 - best prognosis of any spinal cord syndrome



Compression Syndromes

- Central
 - weakness of UE > LE
 - “cape-like” sensory deficit



Compression Syndromes

■ Conus

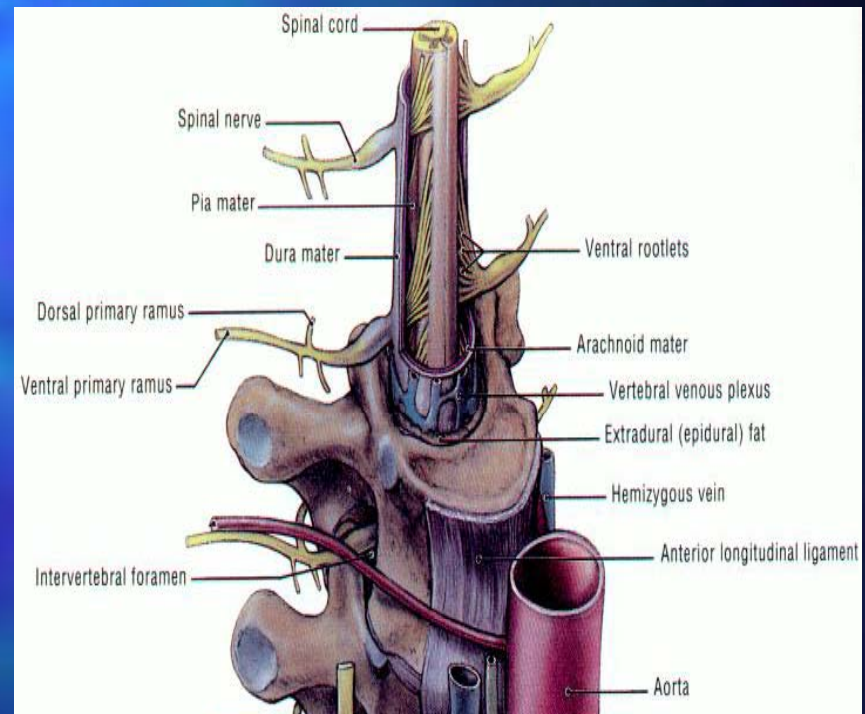
- pain rare, motor and sensory loss usually symmetric/saddle, autonomic symptoms early, sudden onset

■ Cauda Equina

- pain may predominate (often radicular), motor and sensory loss usually asymmetric, autonomic symptoms late, gradual onset

Location

- Extradural (ED)
- Intradural
Extramedullary (IDEM)
- Intramedullary (IM)



Extradural Tumors

- 55% of spine tumors
- tissues: bone, epidural fat, vessels
- majority are metastatic
- “feathered” appearance on myelogram



Extradural Tumors

- Metastatic
 - usually cause bone destruction
 - include lung, lymphoma, breast, and prostate (last two may be osteoblastic)
- Tumors with both ED and ID potential
 - meningiomas (15% are wholly extradural)
 - neurofibromas

Extradural Tumors

- Chloromas
 - focal infiltrate of leukemic cells
- Angiolipomas
 - very rare (60 cases in literature)
- Spine based tumors

Spine Based Tumors

- Benign

- hemangioma, osteoid osteoma, osteoblastoma, osteochondroma, giant cell tumors, eosinophilic granulomas, aneurysmal bone cysts

- Malignant

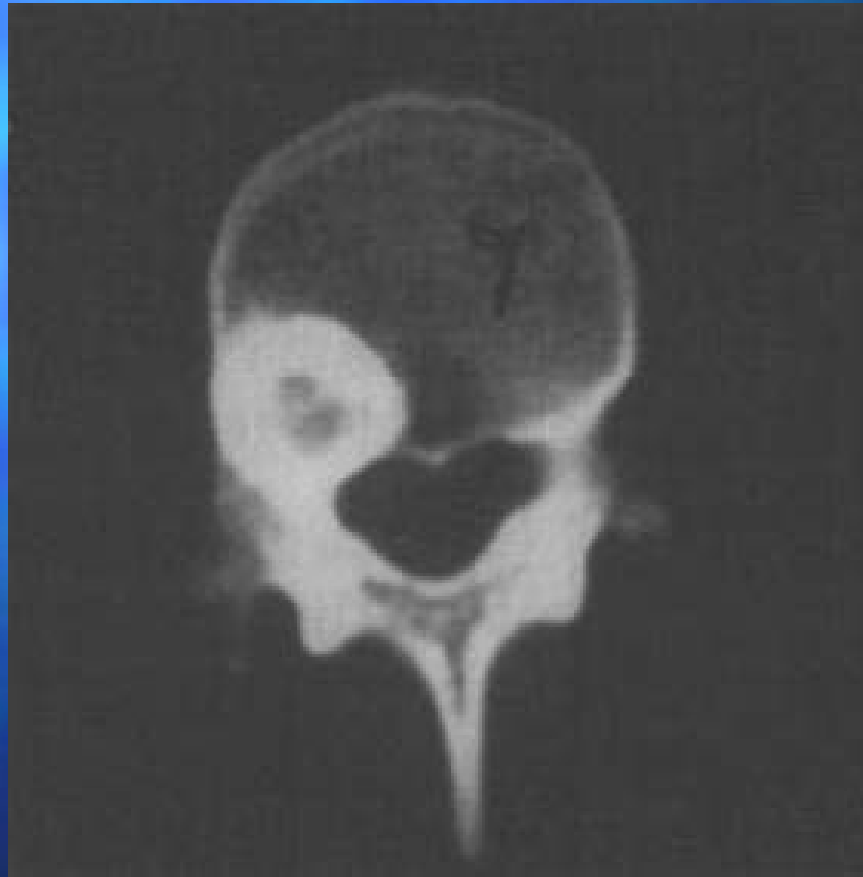
- chordoma, osteosarcoma, chondrosarcoma, fibrosarcoma, Ewing's sarcoma, multiple myeloma, lymphoma, neuroblastoma, mets

Benign Spine Tumors

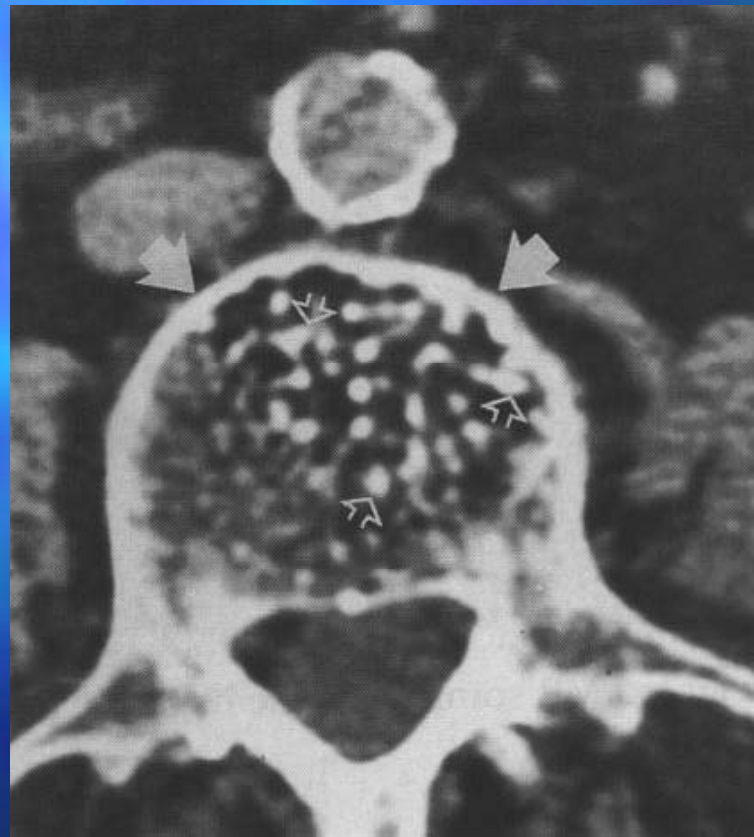
Benign Bone Tumors

Tumor	Age (Years)	Sex	Location	Radiograph	Treatment	Comments
Osteoid osteoma	<30	M	Posterior elements	Nidus and sclerosis	Excision	Painful scoliosis
Osteoblastoma	<30	M	Posterior elements	Radiolucent	Excision	Painful scoliosis
Hemangioma	>30	M, F	Body trabeculae	Vertical	None or surgery if symptomatic	Most are asymptomatic
Giant cell tumor	>20	F	Body and sacrum	Radiolucent	Excision (rad.?)	Recurrence is common
Aneurysmal bone cyst	<25	M, F	Posterior elements	Lytic and expansile	Excision	May involve next vertebra
Eosinophilic	<20	M	Body	Radiolucent or collapse	Usually none	Self-limiting process
Osteochondroma	10-20	M	Posterior elements	Exophytic	Excision if symptomatic	May become malignant

Brad



Matt

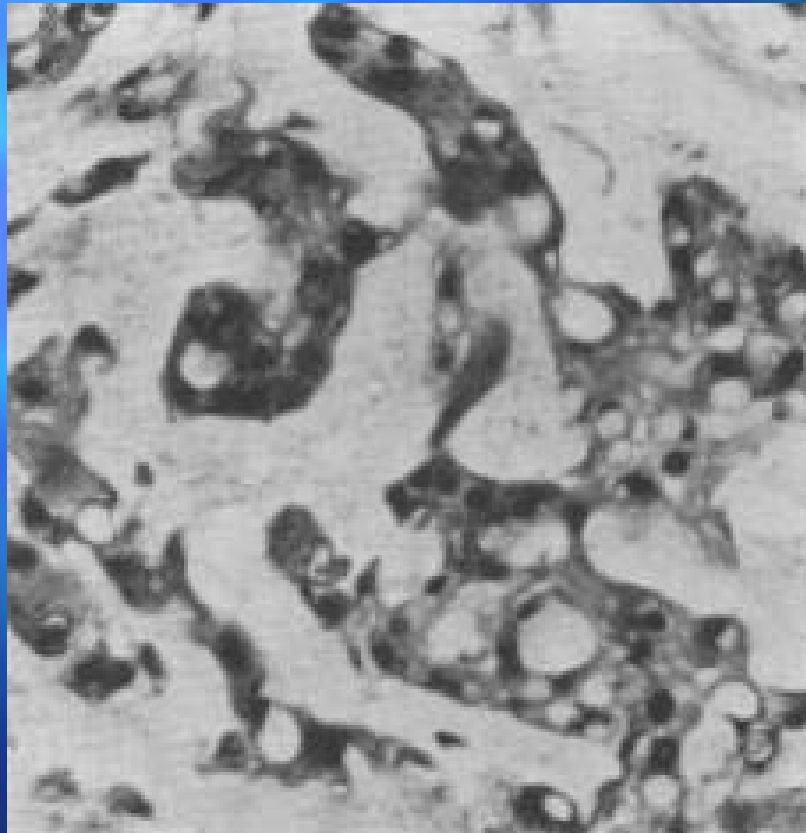


Malignant Spine Tumors

Malignant Bone Tumors

Tumor	Age (Years)	Sex	Location	Radiograph	Treatment	Comments
Multiple myeloma	>50	M	Body	Osteopenia and collapse	Chemotherapy and radiation	Surgery if instability
Chordoma	30-70	M	Sacrum, C1-C2, Body	Radiolucent destructive	Aggressive excision	Recurrence is common
Lymphoma	>20	M	Body	Lytic or sclerotic	Radiation and chemotherapy	Non-Hodgkin's type
Neuroblastoma	<3	M	Body	Osteopenia destructive	Excision and chemotherapy/radiation	Rosette on histology
Chondrosarcoma	50-70	M, F	Body	Clacified and destructive	Excision	Chemotherapy/radiation if incomplete excision
Osteosarcoma	10-20	M	Body	Destructive	Excision, chemotherapy, radiation	Rare in spine
Metastatic tumors	>40	M, F	Body	Lytic or blastic	Radiation, surgery	Breast, lung, prostate, etc.

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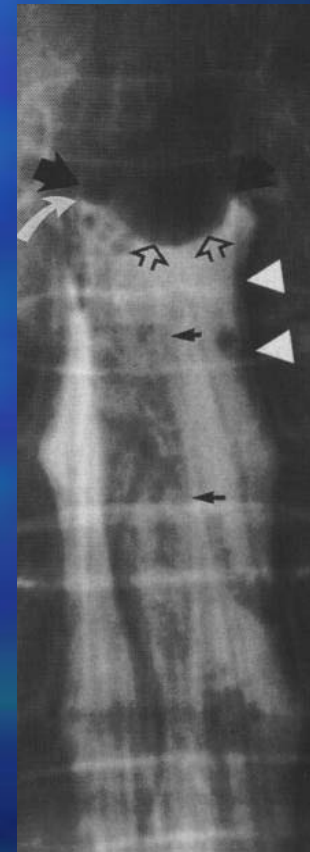


Chordomas

- Arise from notochord
- 1-5% of all malignant bone tumors
- 50% sacral, 35% clival, 15% mobile spine, rarely ectopic
- 2M:1F
- Lytic lesion on XR
- 30% metastasize
- Treat with complete resection, relatively resistant to radiation

Intradural Extramedullary

- 40% of spinal tumors
- tissues: nerve roots, meninges, CSF
- 4% of spinal metastatic lesions
- sharp meniscus on myelogram

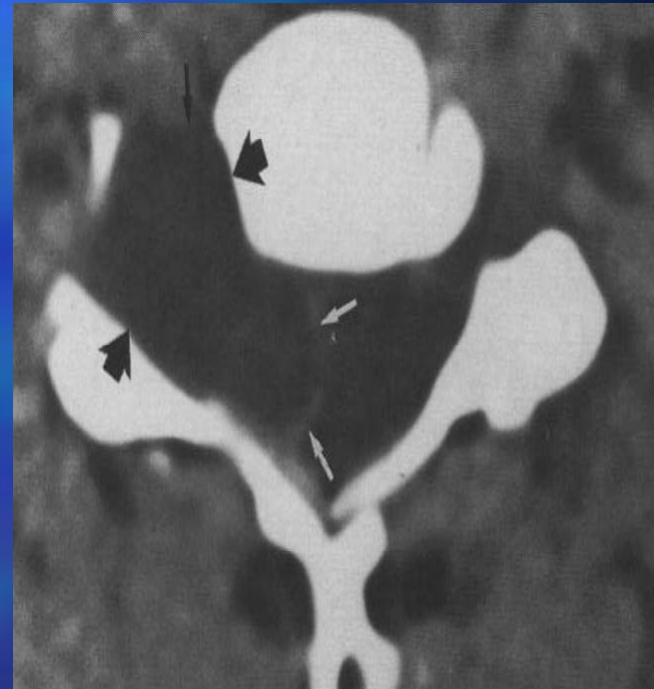


Intradural Extramedullary

- Nerve Sheath Tumors
 - Schwannomas, Neurofibromas, Ganglioneuroma, Neurofibrosarcoma
- Meningiomas
- Lipomas
- Misc/mets

Nerve Sheath Tumors

- Usually from dorsal roots, relatively avascular, globoid, dumbbell appearance when extending through foramen
- 50% in T-spine, C > L
- Schwannomas, nerve goes around tumor
- Neurofibromas, nerve goes through tumor

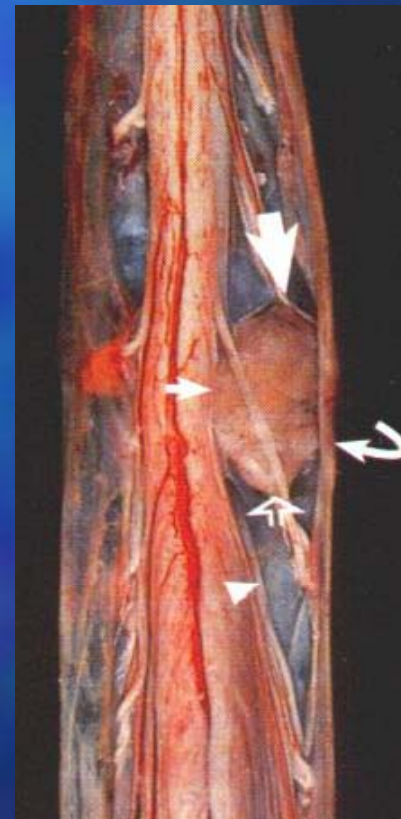


Schwannomas



Meningiomas

- 75-85% in females
- 60-80% are T-spine
- 5-7th decade
- Usually lateral or ventrolateral
- Can often be separated from nerve roots easier than nerve sheath tumors



Paul



Intramedullary

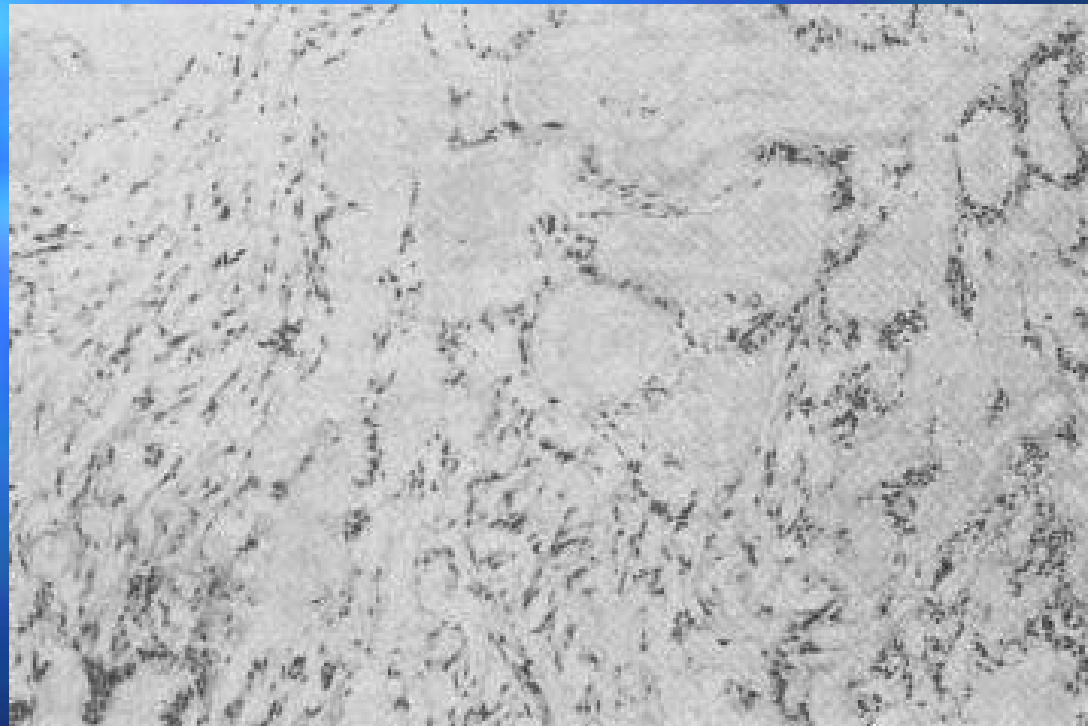
- 5% of spinal tumors
- tissues: cord parenchyma
- <2% of spinal mets
- "sausage" appearance on myelogram



Intramedullary

- Ependymoma, 30%
- Astrocytoma, 30%
- Misc, 30%
 - rare: GBM, dermoid, epidermoid, teratoma, lipoma, hemangioblastoma
 - very rare: neuroma, mets
 - extremely rare: cholesteatoma, oligodendroglioma, lymphoma

Paul



Ependymomas

- 50% of ependymomas are in the spine
- 60% IM, 40% arise from the filum*
- Commonest glioma of lower cord
- Of IM, predominance is cervical or cervicothoracic region
- rarely malignant
- myxopapillary variant

Astrocytomas

- 50% have well defined plane
- relatively avascular
- 20% are malignant
- Occurs at all levels, T-spine most common
- often cystic

