



# Magnetic Resonance Imaging

## 4<sup>th</sup> Class

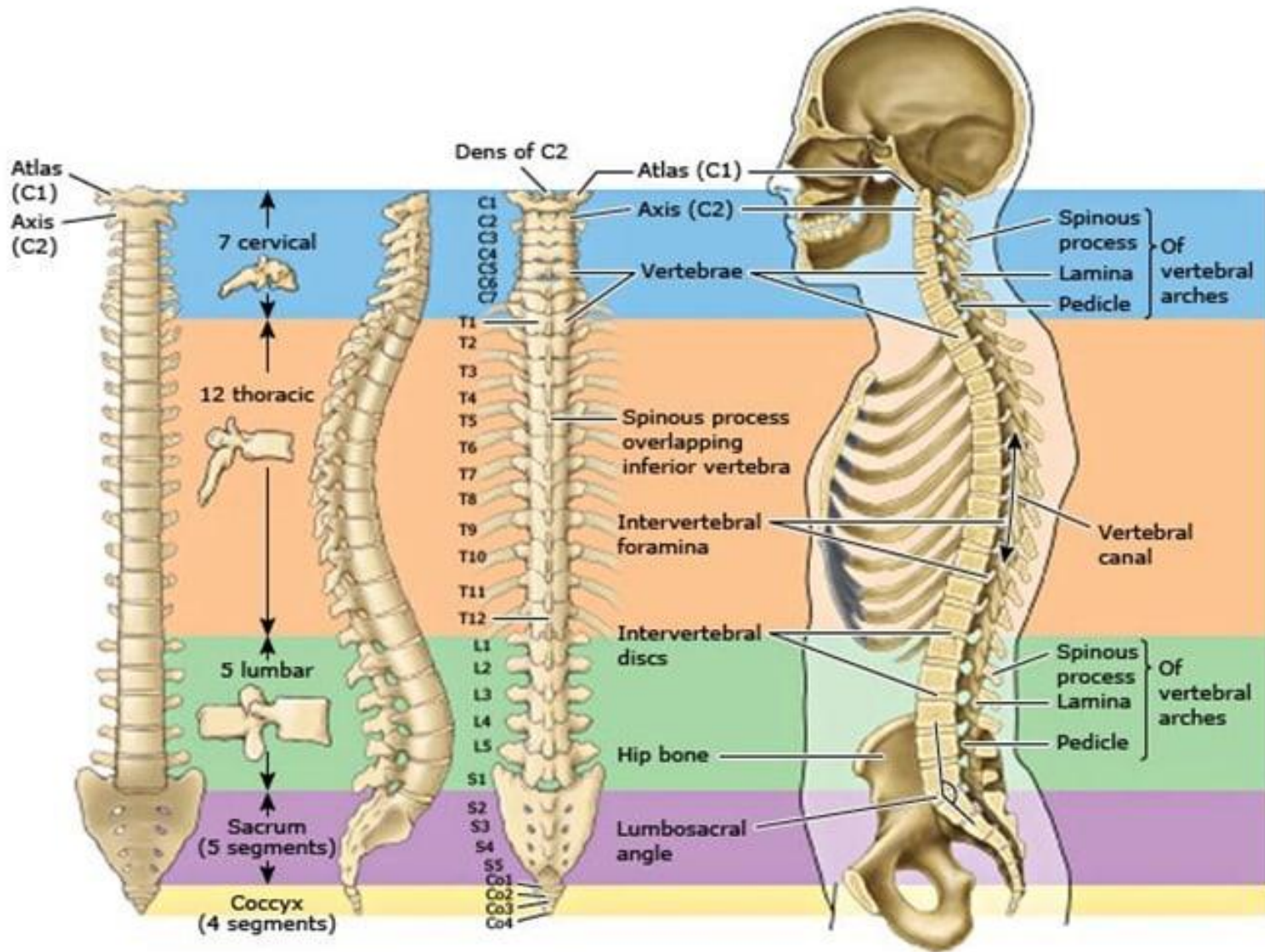
### MRI of The Cervical-dorsal-lumber Spinal Cord

(للمعلومة والإطلاع)

Assistant lecturer  
M. A. Mohammed  
MS.C. Theoretical Nuclear Physics

2023-2024

# Spine anatomy overview



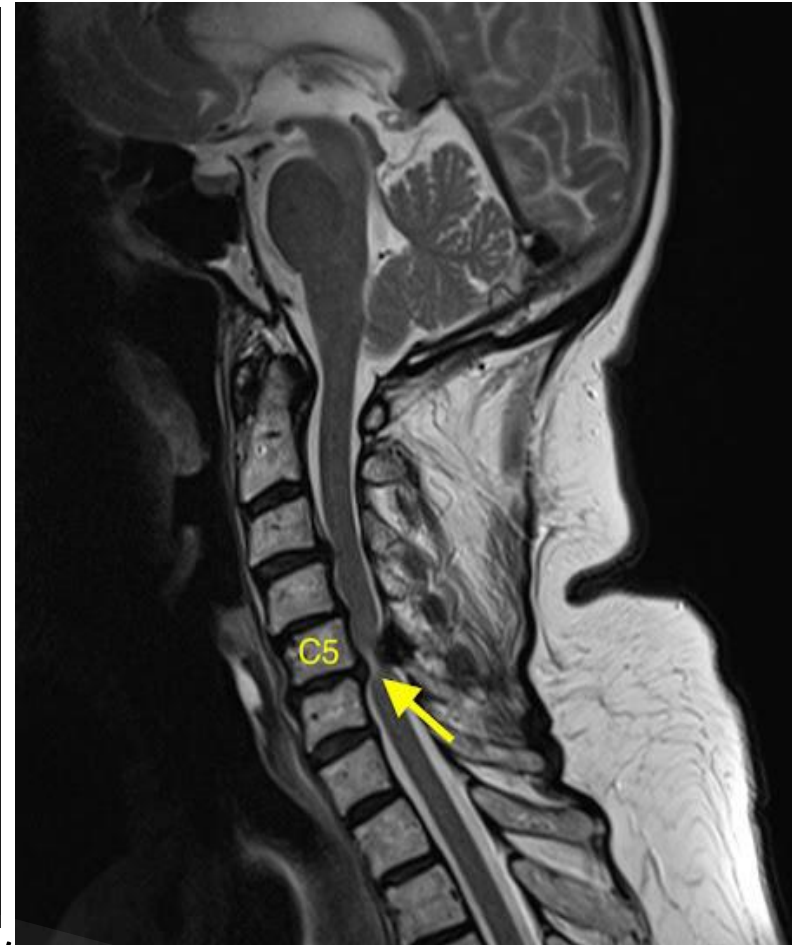
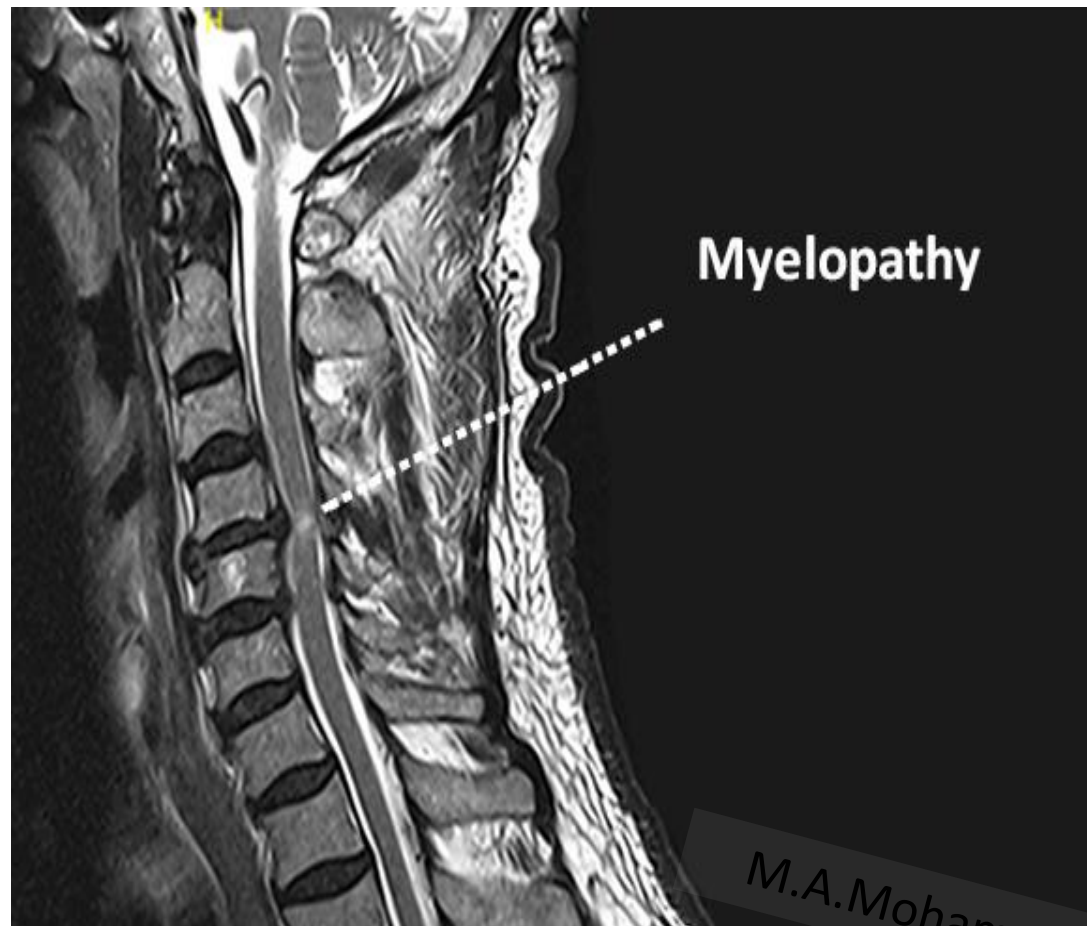
**A** Anterior view

**B** Right lateral view

**C** Posterior view with vertebral ends of ribs

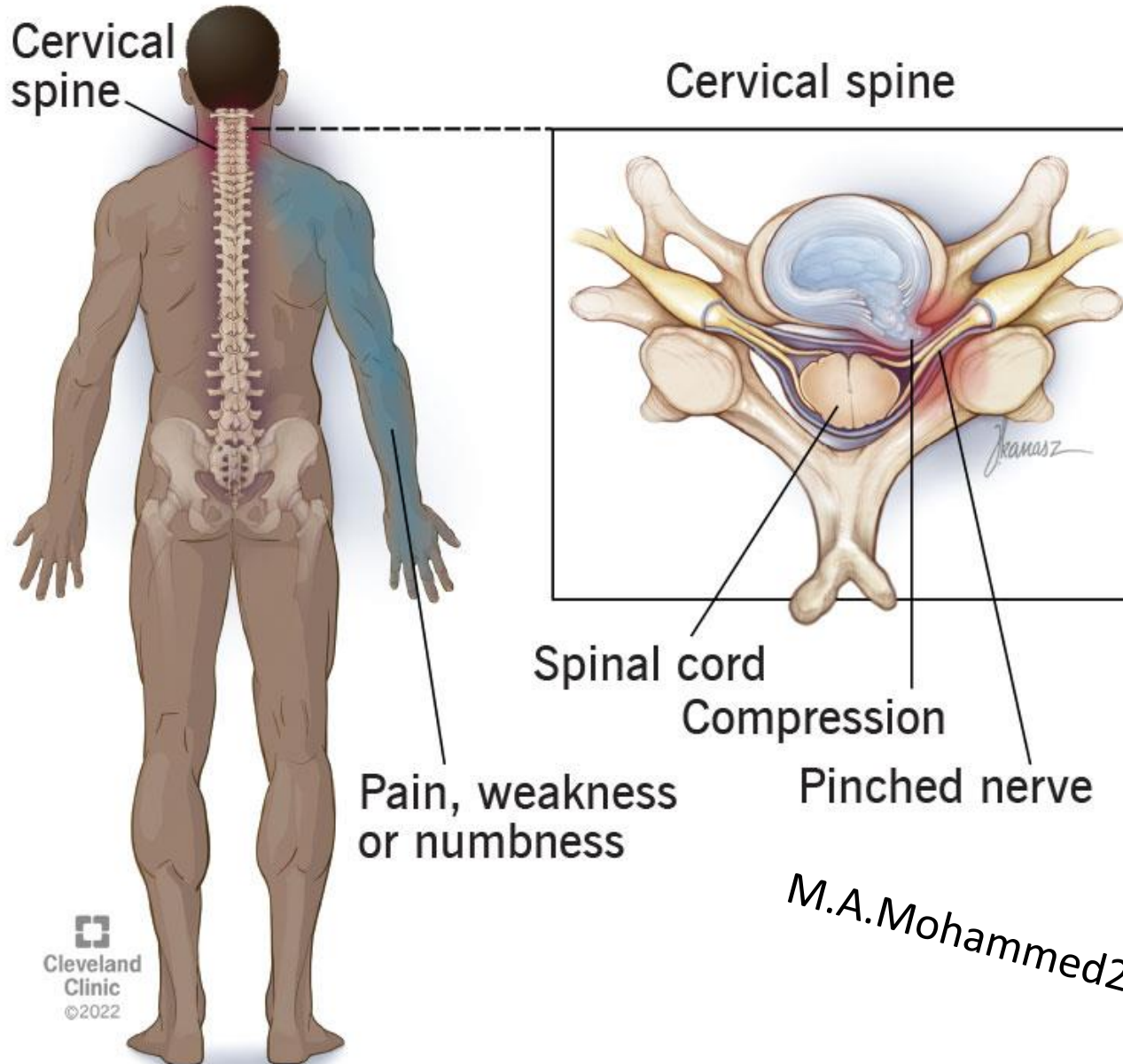
**D** Medial view of bisected column from left with ribs, cranium (skull), and pelvis

# MRI of The Cervical-dorsal-lumbar Spinal Cord



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# Cervical Radiculopathy



**Cervical spine trauma  
(Fracture)**

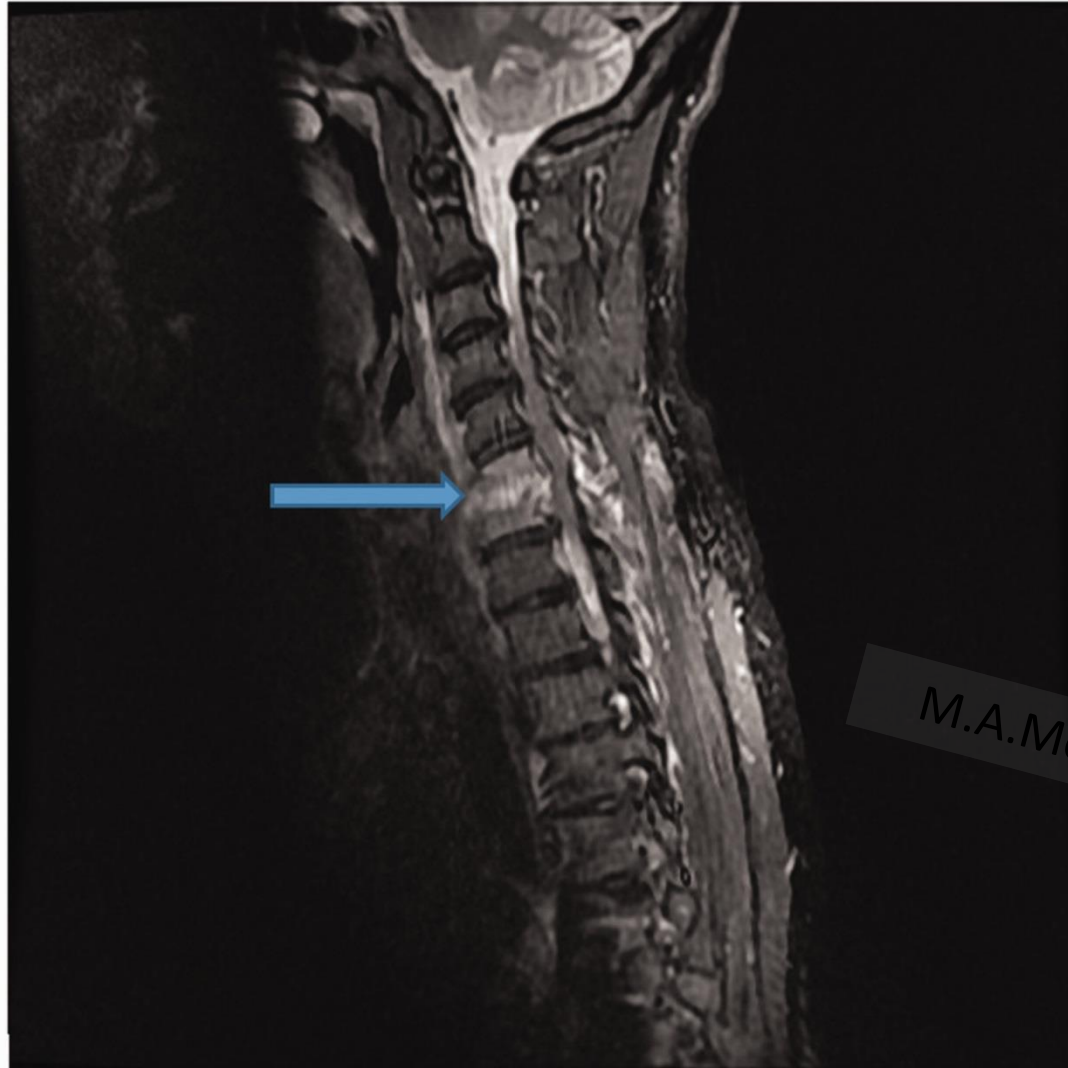
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## Cervical spinal cord tumor



# Cervical spine infection



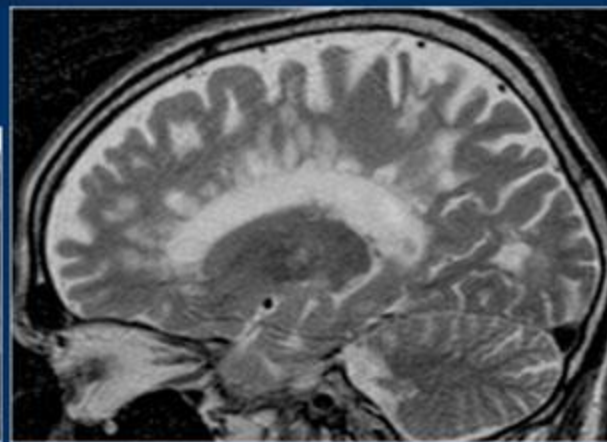
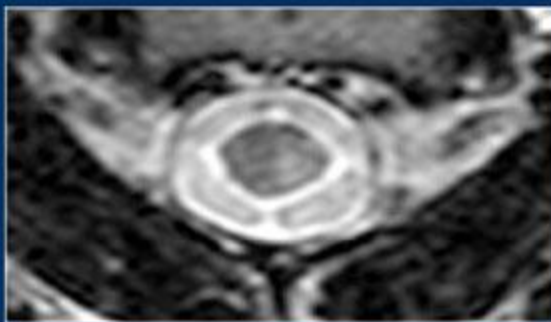
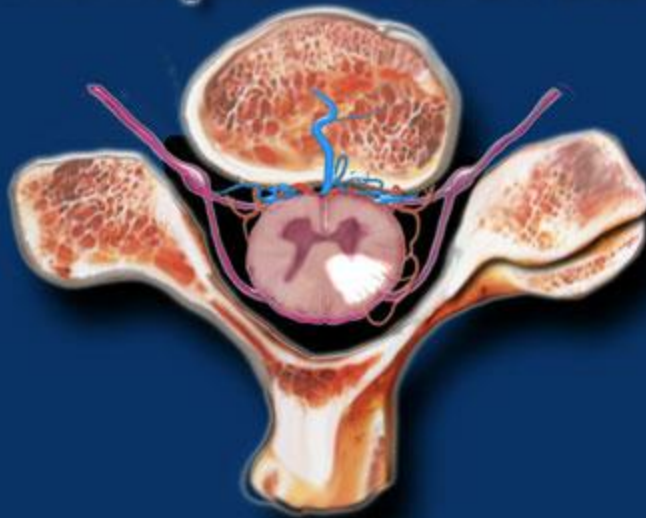
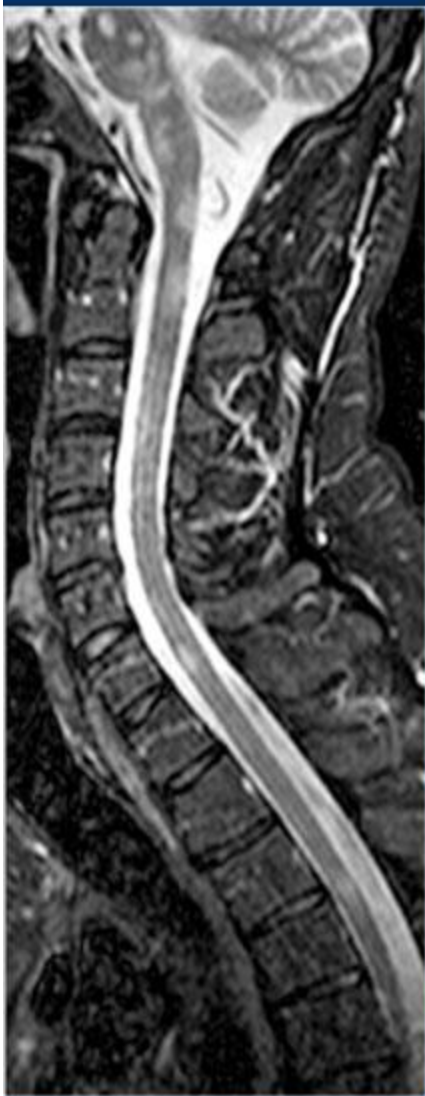
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# MS in cervical spinal cord





# Multiple Sclerosis

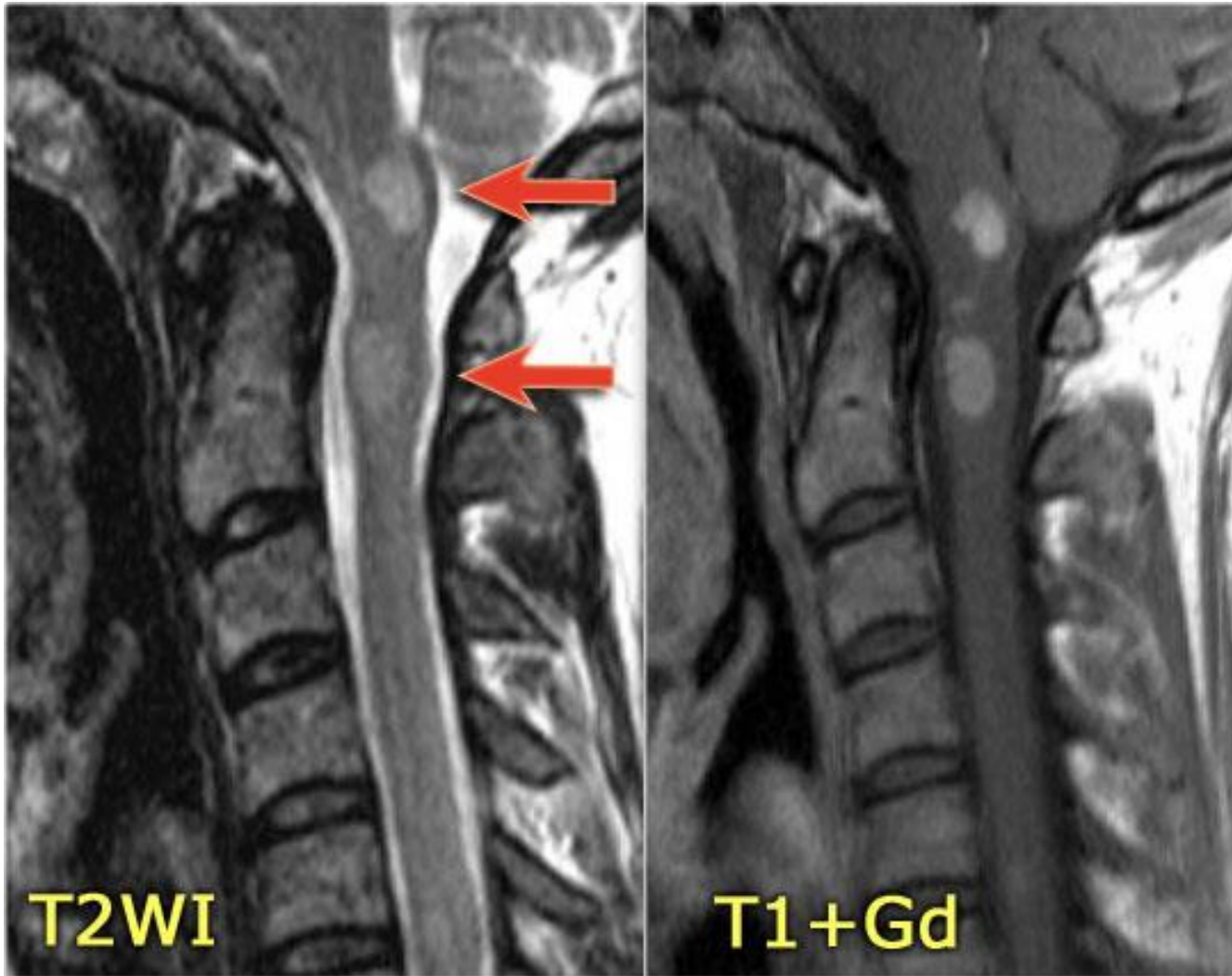


# Astrocytoma simulating Transverse myelitis

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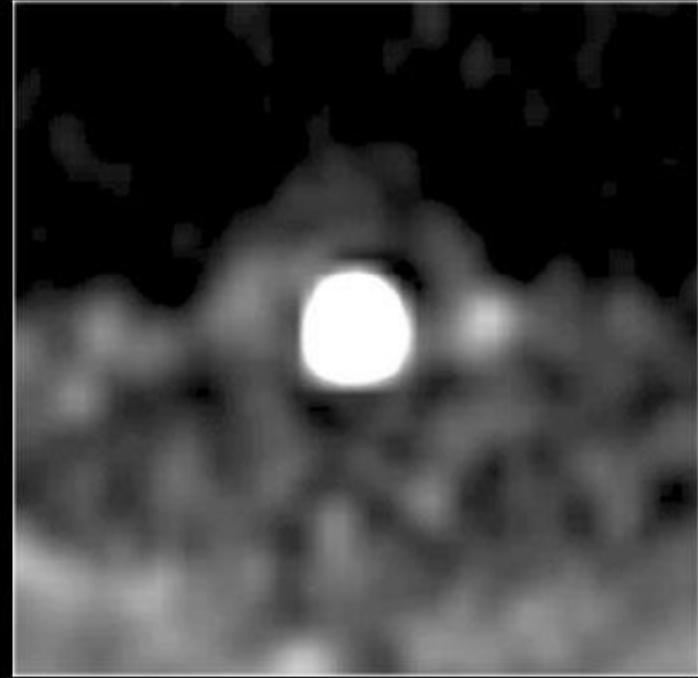
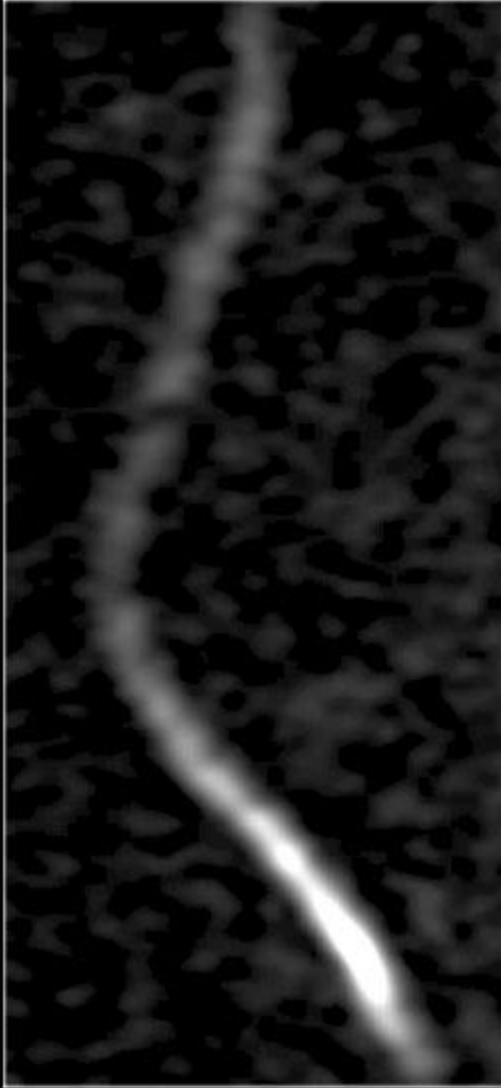


## Multiple ependymomas



Aortic aneurysm stenting is the most common cause of spinal cord infarction. The diffusion images show restricted diffusion.

## DWI in spinal cord ischemia



DWI

**The most common cause of cord compression is metastatic disease.**



**There is myelopathy as a result of compression by a dorsally located epidural hemorrhage.**

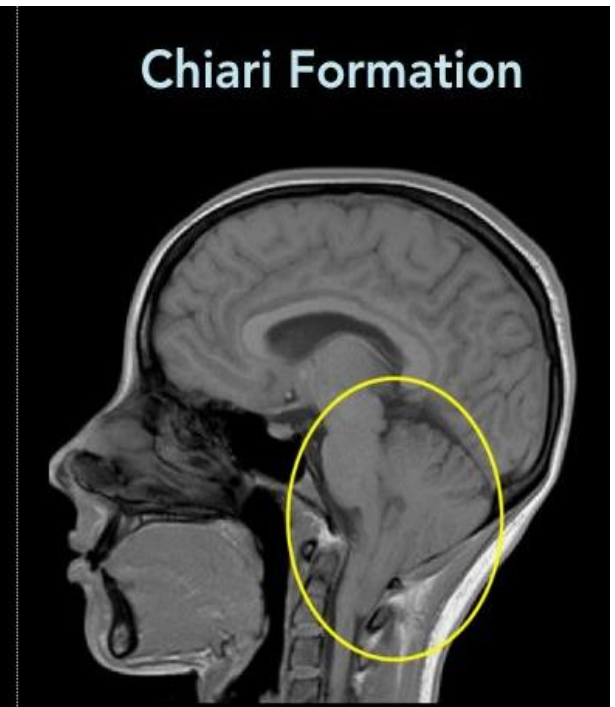
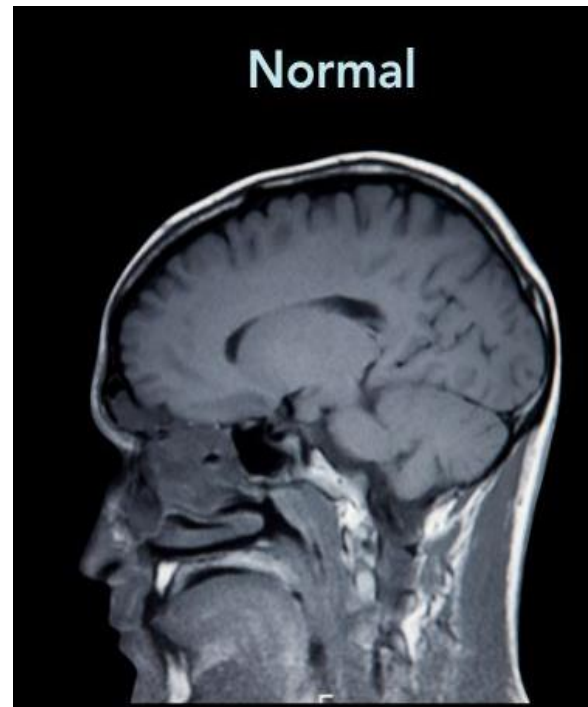


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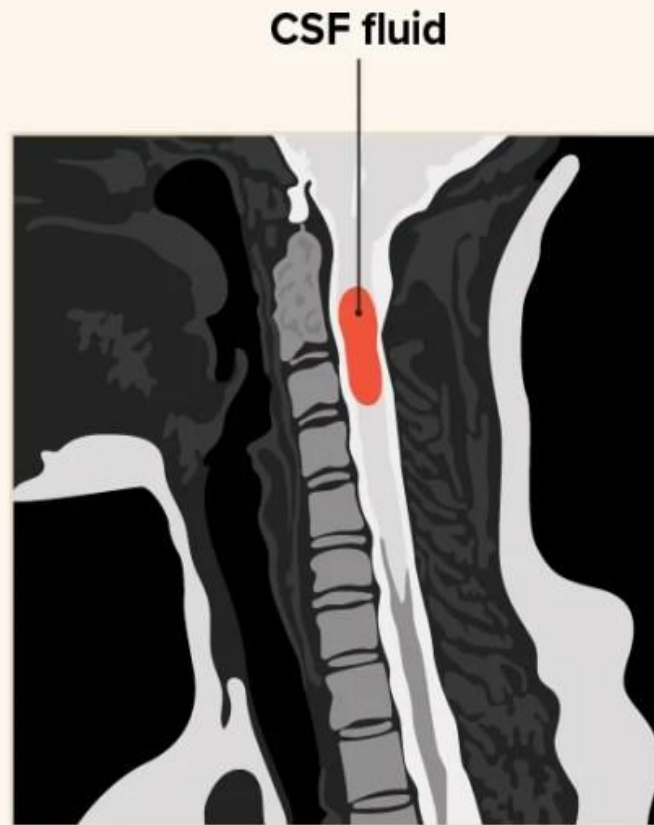
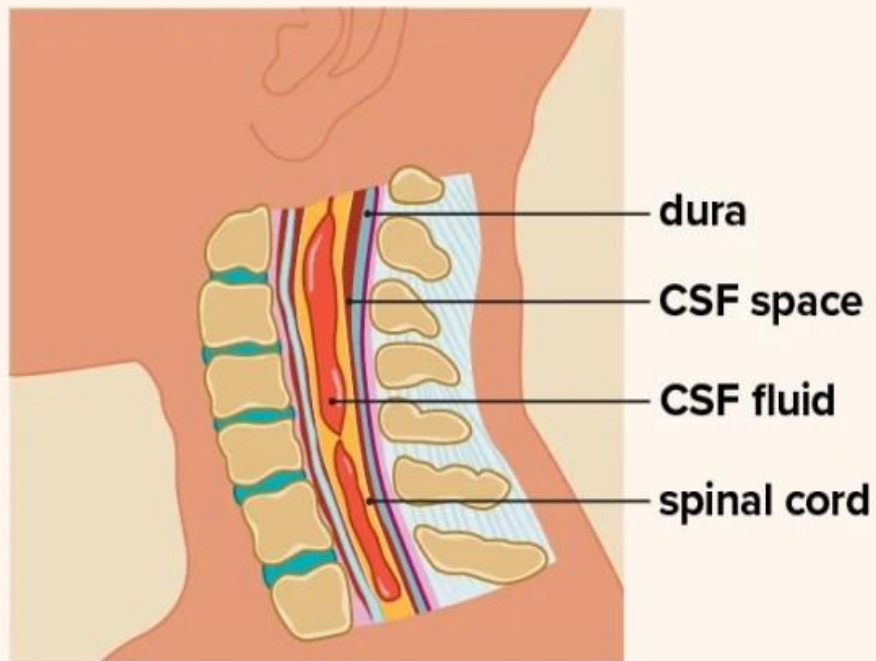
**Syringomyelia** is the formation of a fluid-filled cyst (**syrinx**) within the spinal cord. The most common site is the cervical spine in the neck region. As the syrinx grows, it presses on the spinal cord and interferes with the transmission of nerve impulses.

**Chiari malformation** is a condition in which brain tissue extends into the spinal canal. It occurs when part of the skull is misshapen or smaller than is typical.

**syrinx**

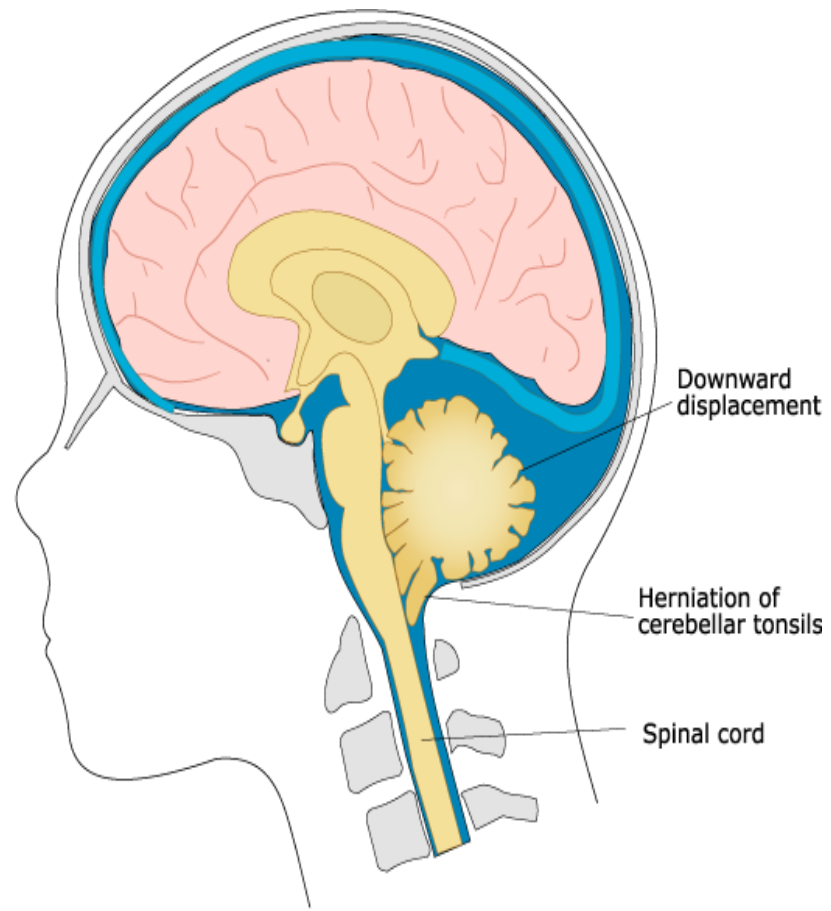
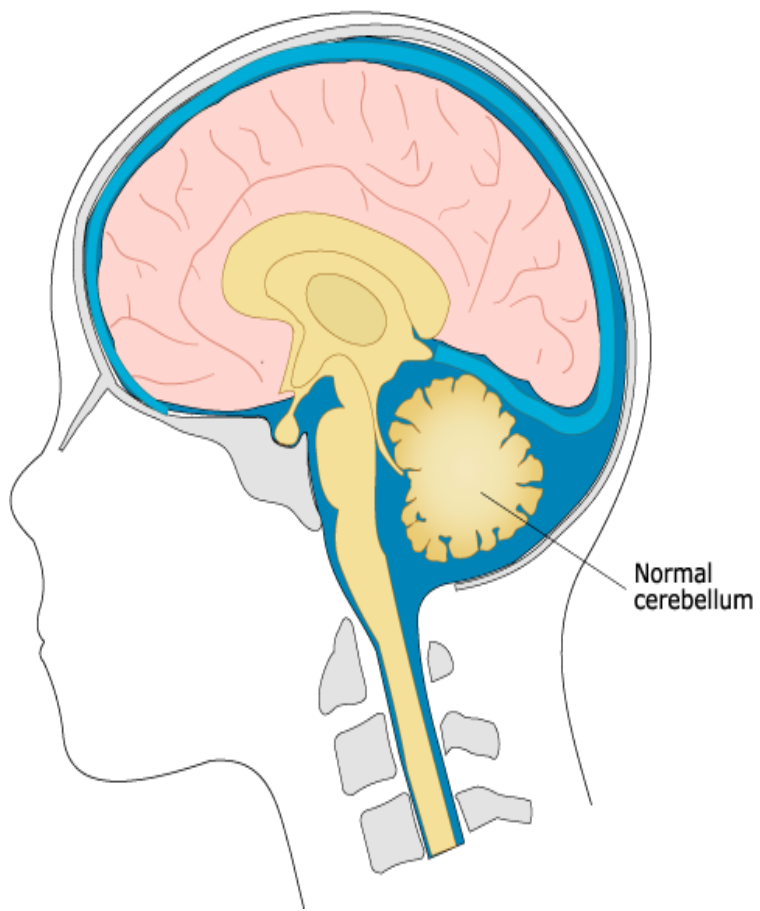


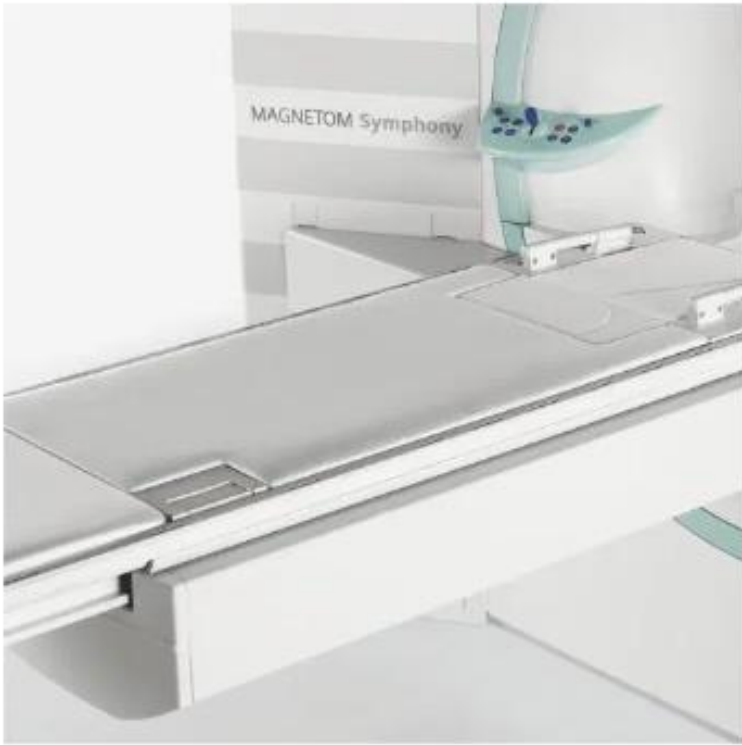
# Syringomyelia



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CP Spine Array Coil



Peripheral gating



MR array coils

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**GE Signa MRI 16 CH Head Neck Coil**



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**Cervical Spine MRI coil**

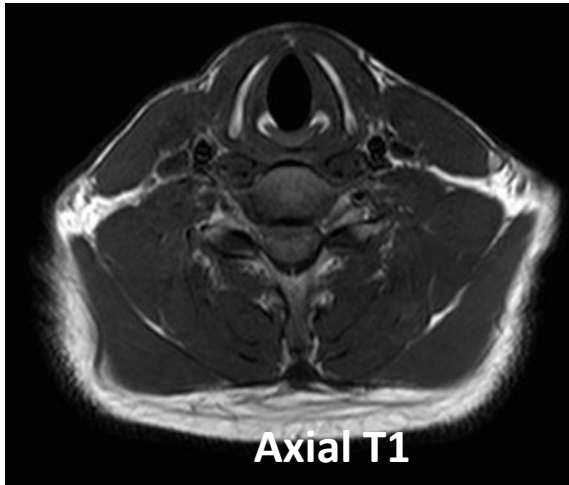




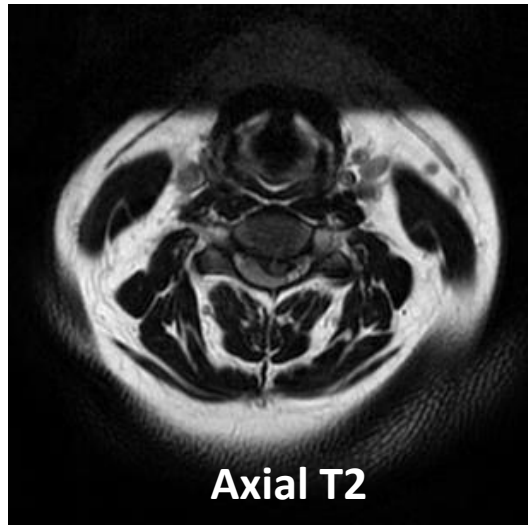
**CTL Spine Array Coil 1.5 T 4 Channels for Toshiba MRI**



**MRI patient pads**



**Axial T1**



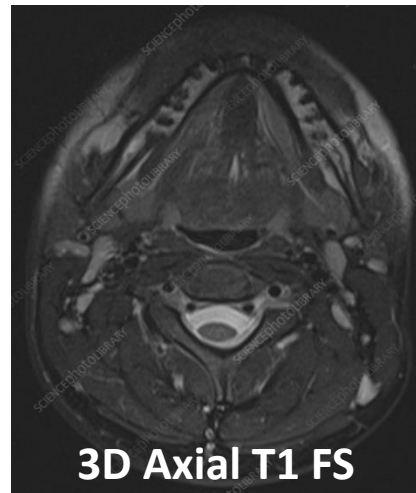
**Axial T2**



**Sagittal T1**



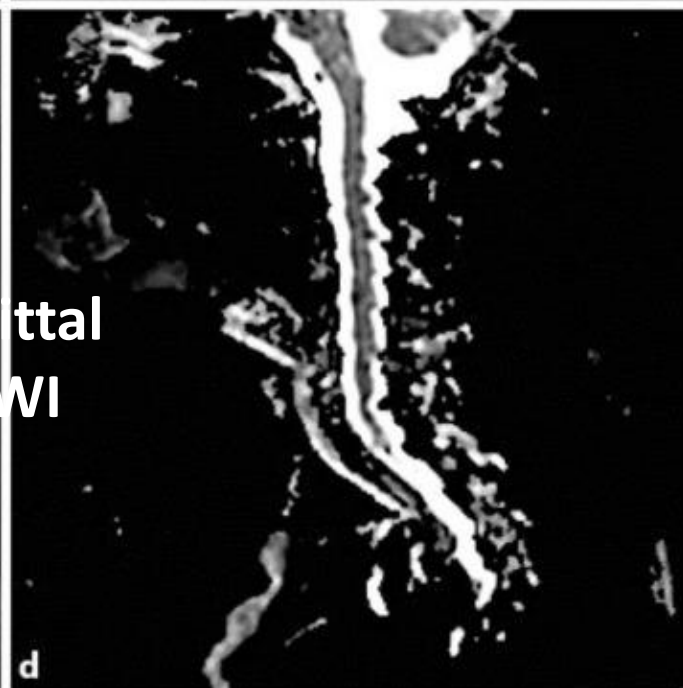
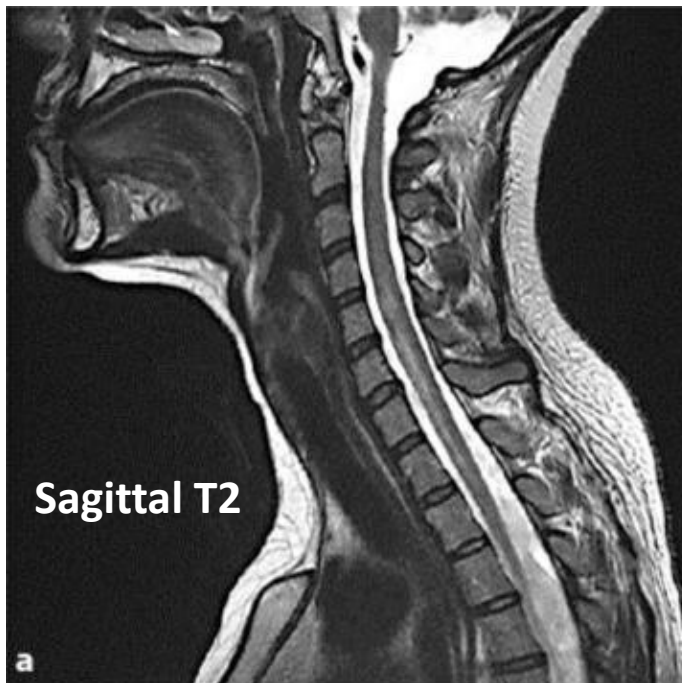
**Sagittal STIR**



**3D Axial T1 FS**



**Sagittal T2**

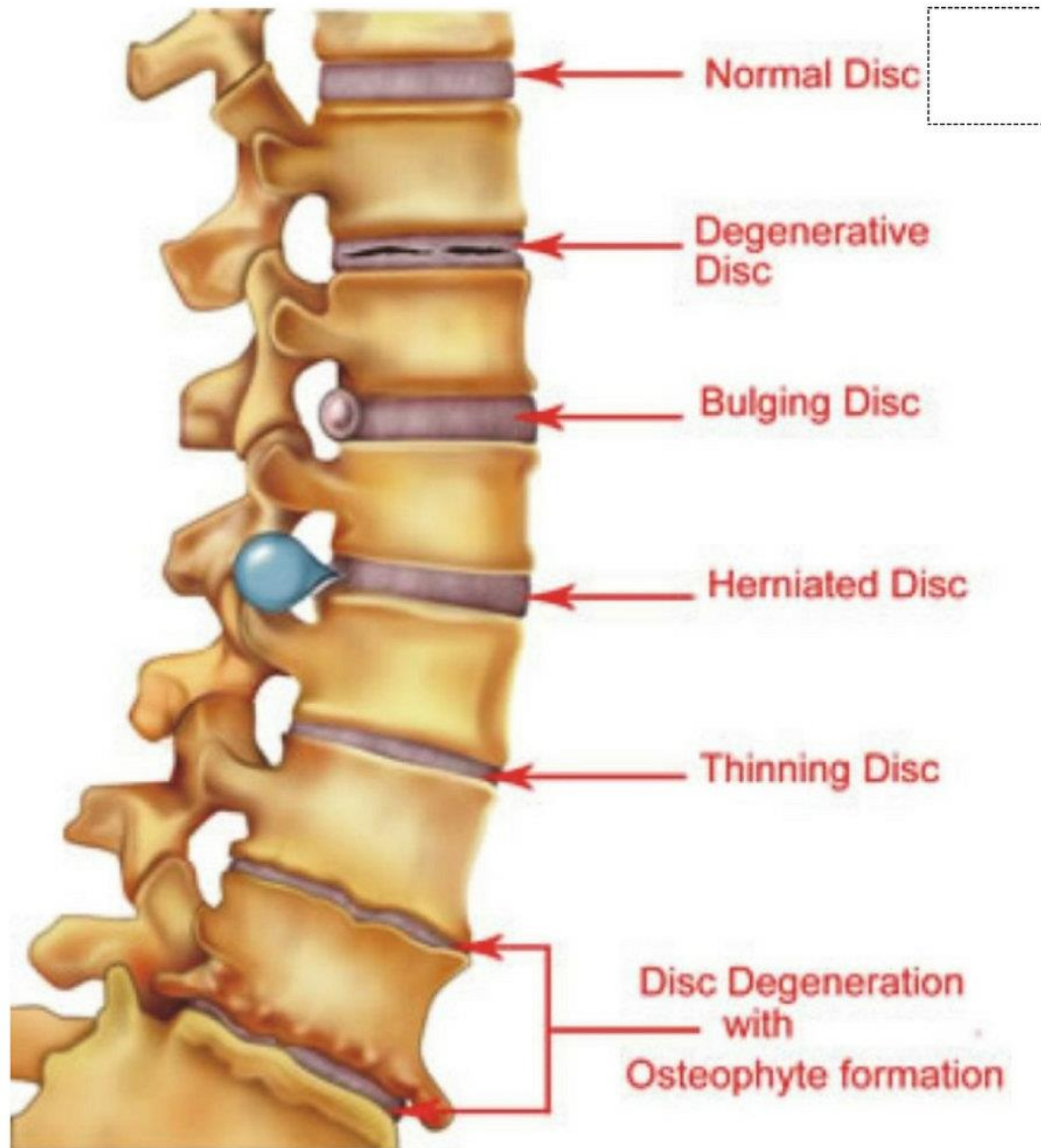


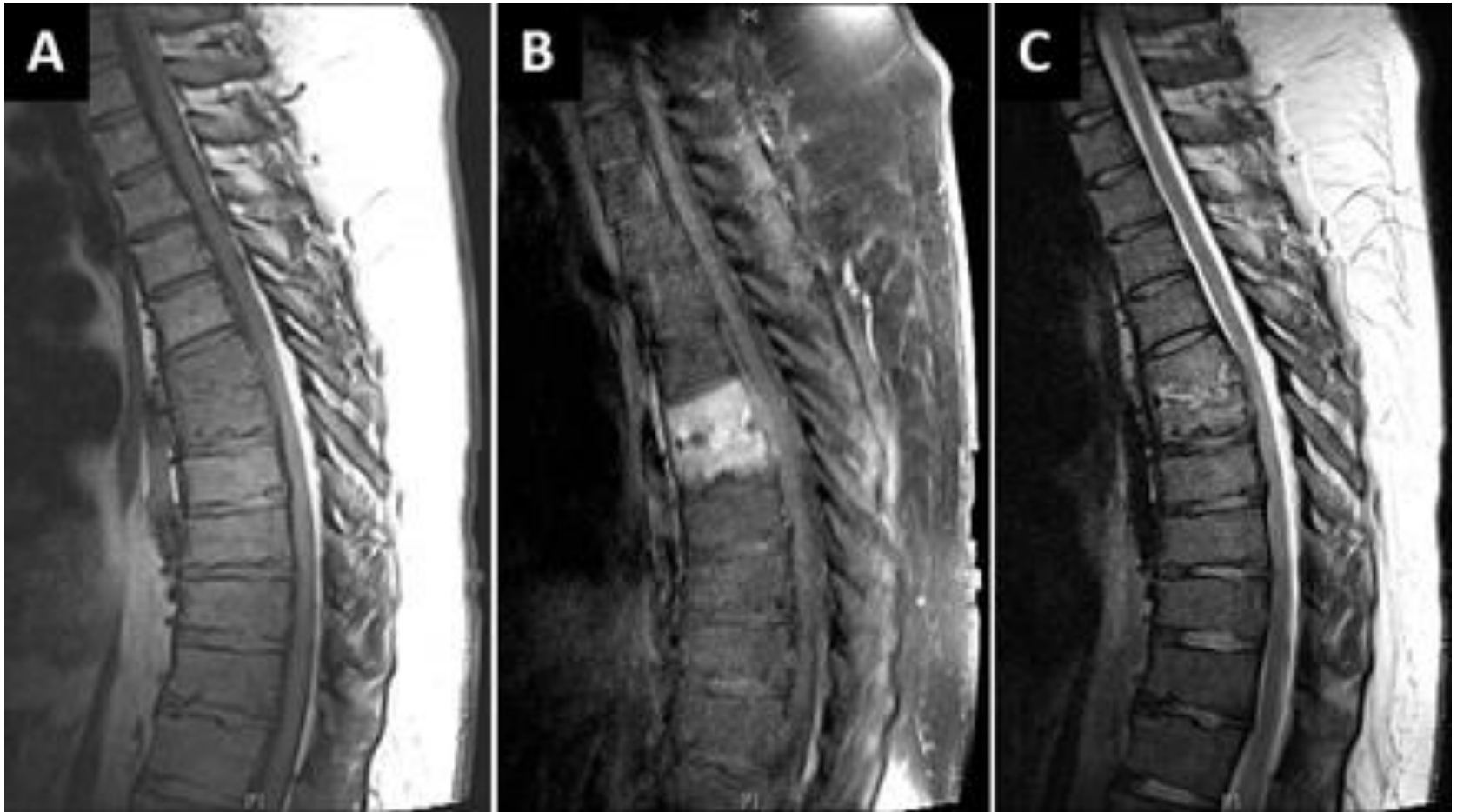


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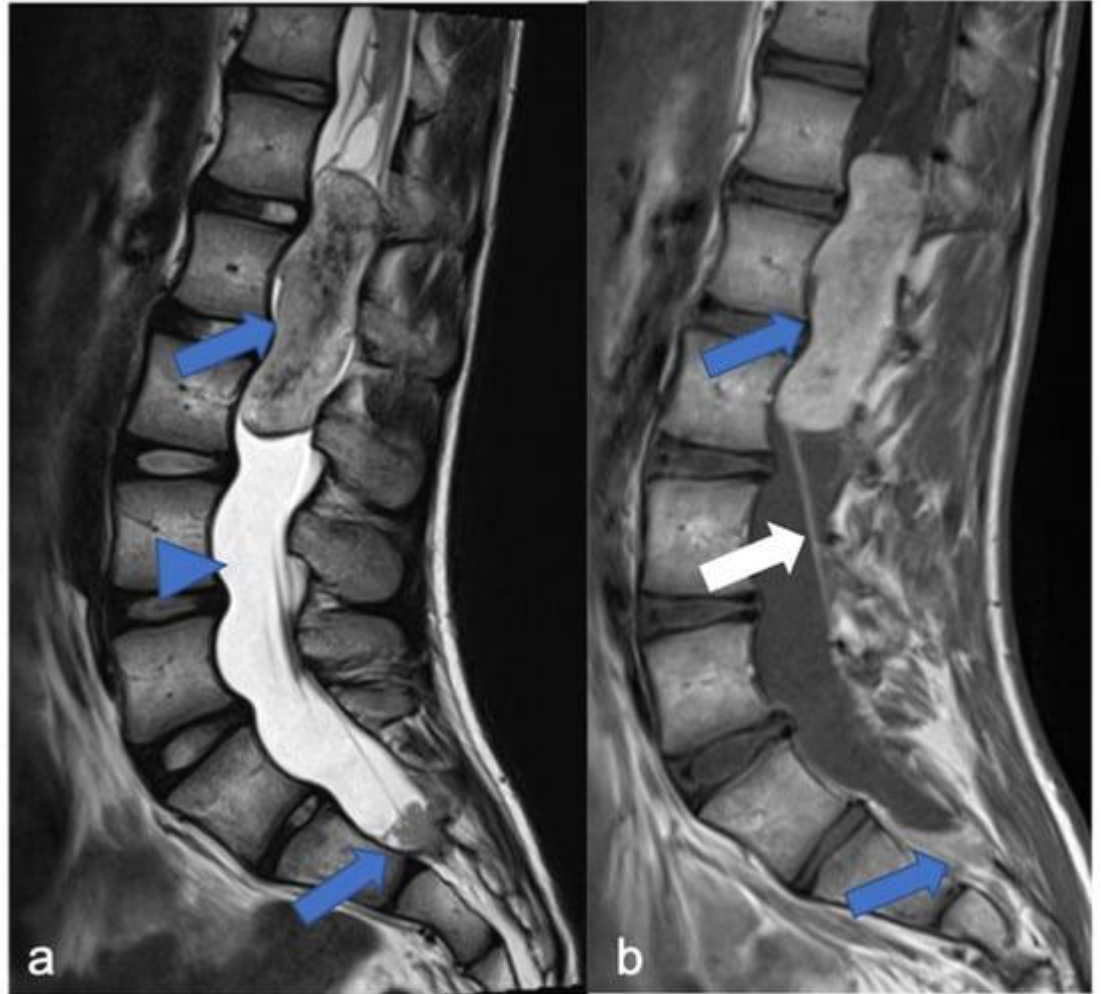


**T6–7 discitis/osteomyelitis**

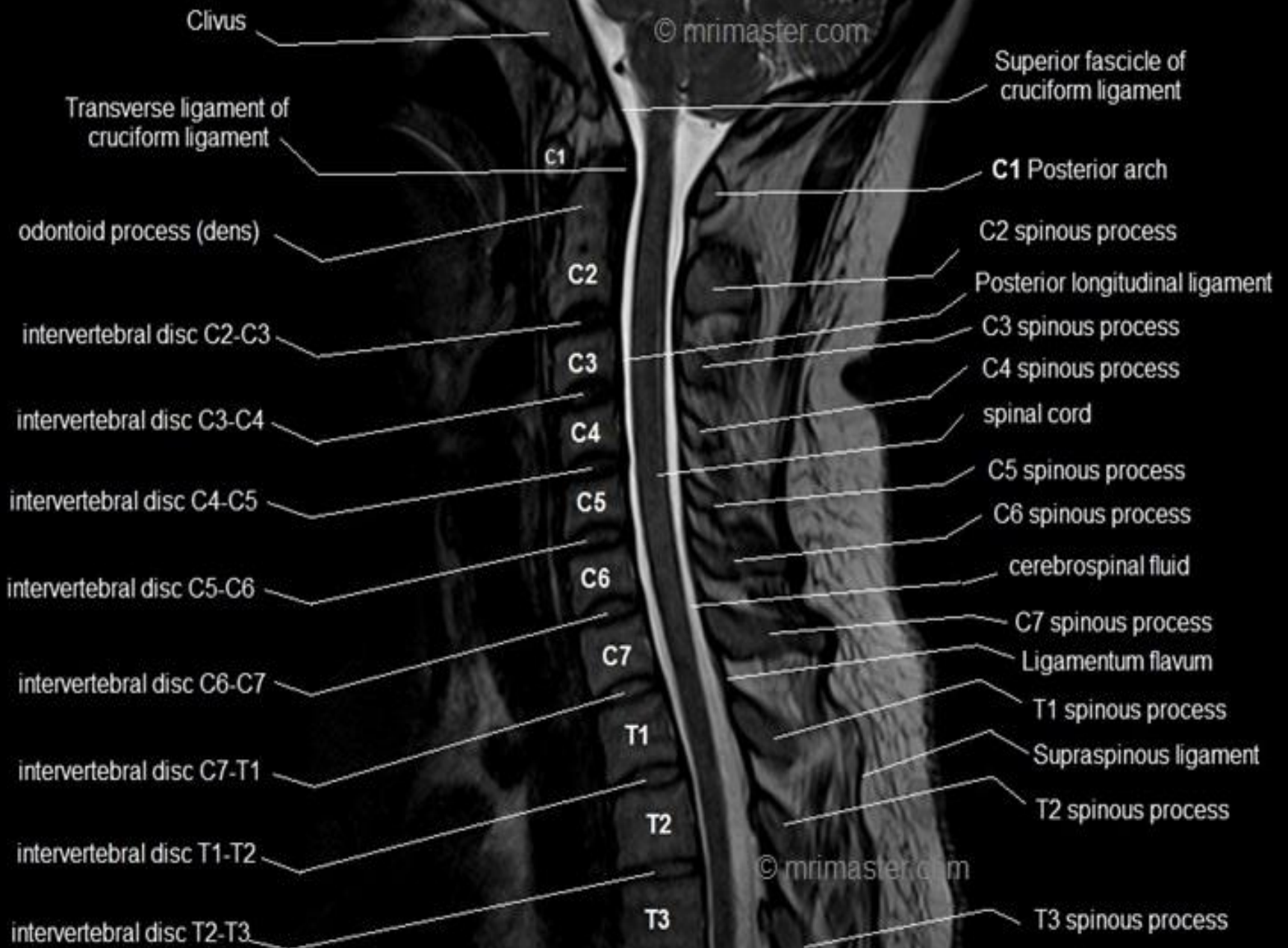


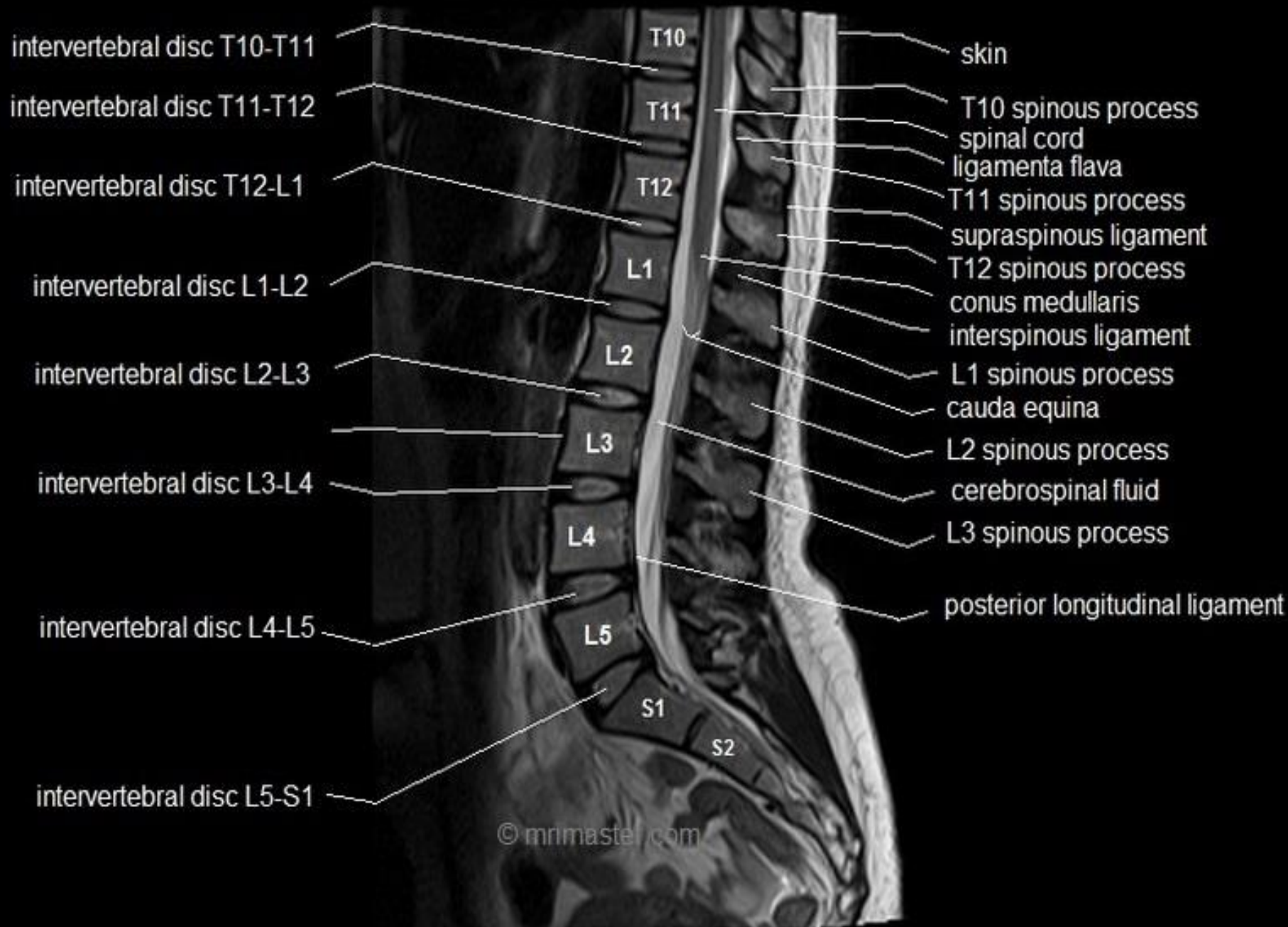
**Multipole Sclerosis in thoracic spine**

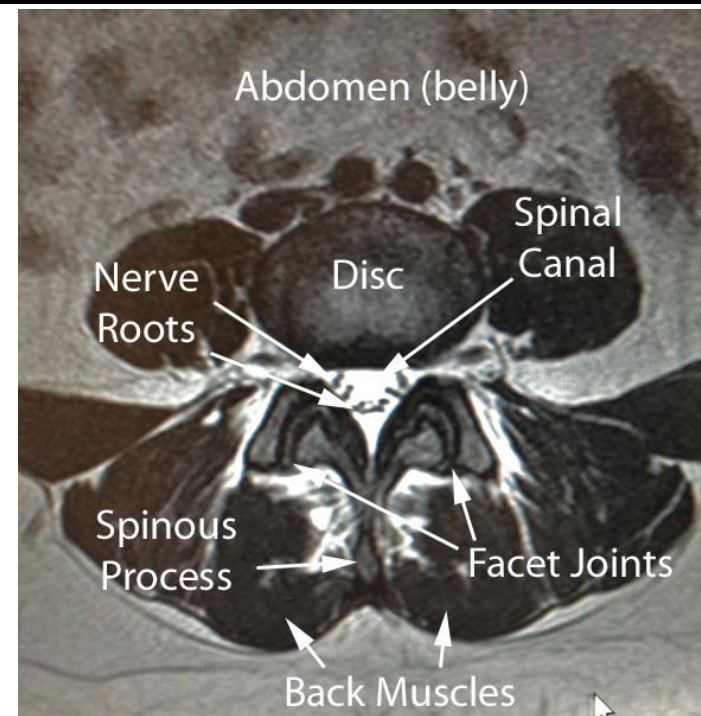
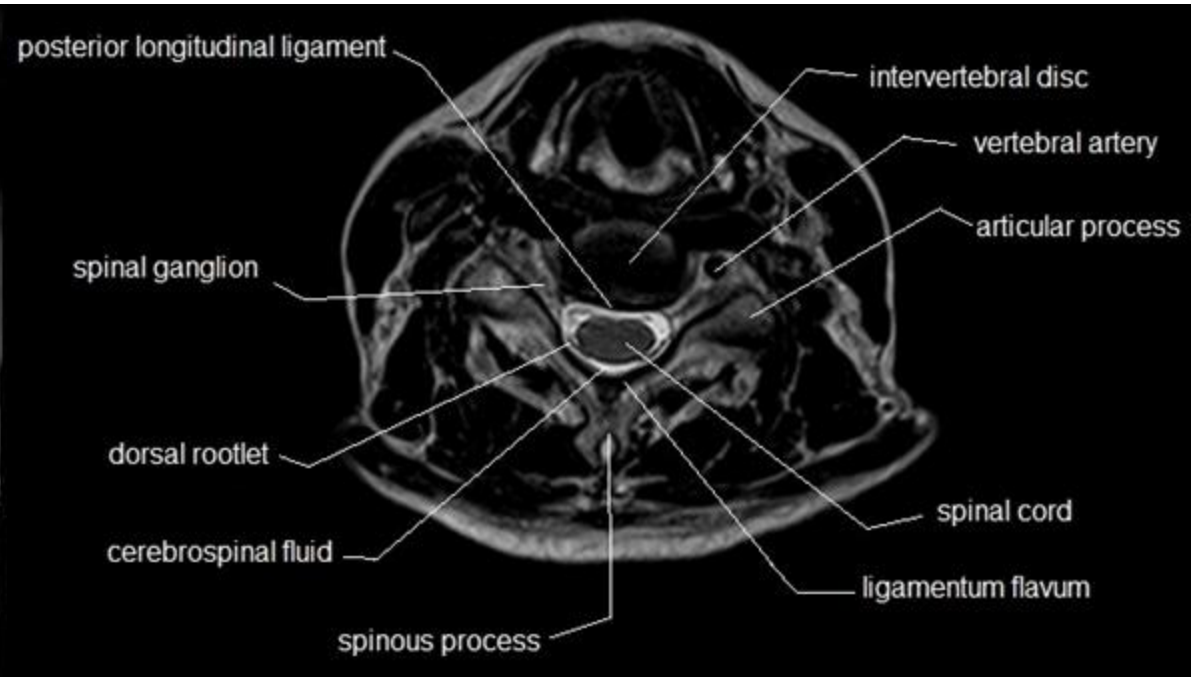
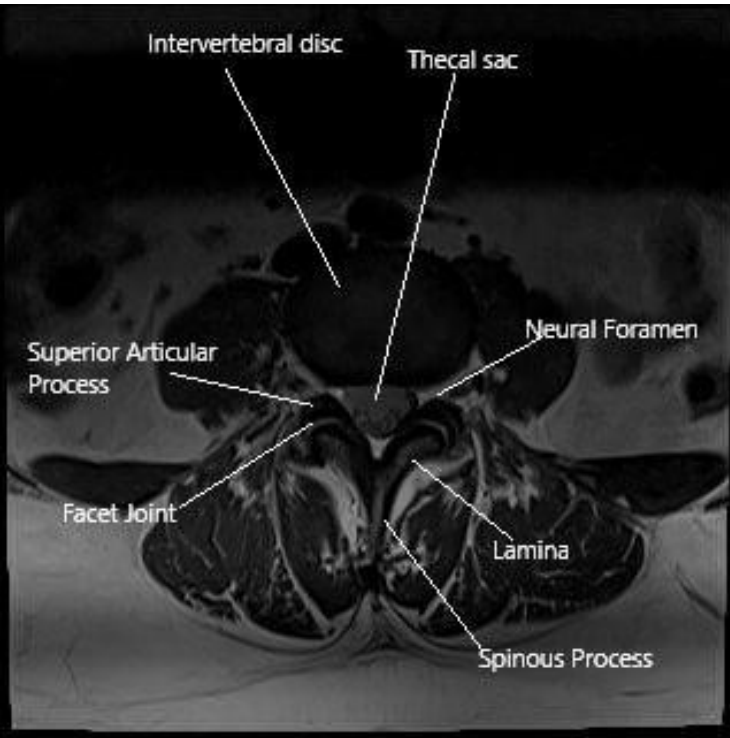
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Myxopapillary ependymoma







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**Spinal dysraphism** is an umbrella term that describes a number of conditions present at birth that affect the spine, spinal cord, or nerve roots.

• **Spinal Dysraphism** refers to a variety of congenital anomalies resulting from **failed** fusion of dorsal spinal elements.

**Open Spinal Dysraphism**

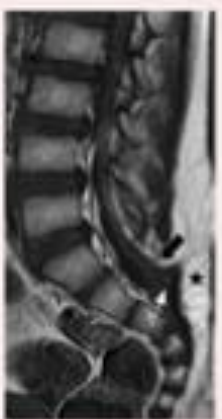


Myelomeningocele



Myelocele

**Closed Spinal Dysraphism**

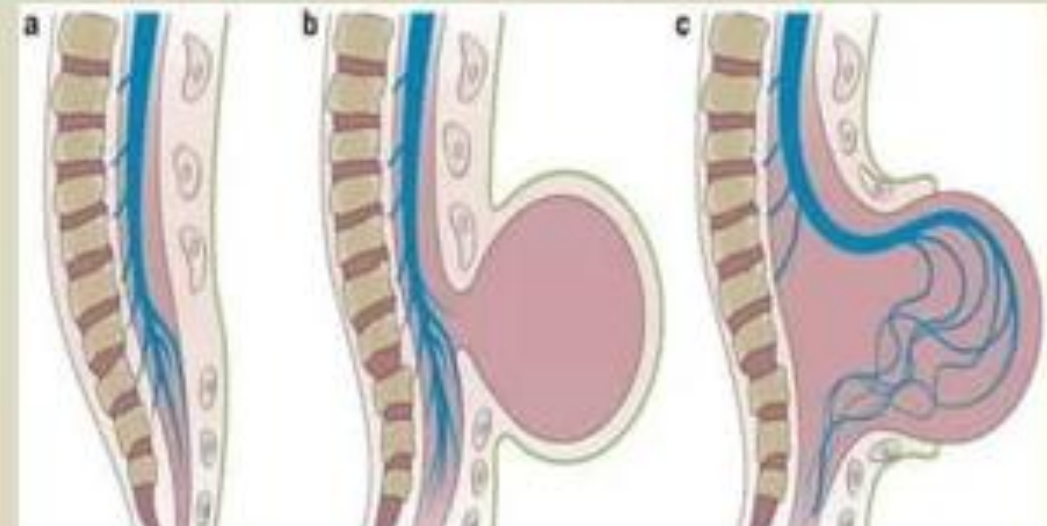


Lipomyelocele

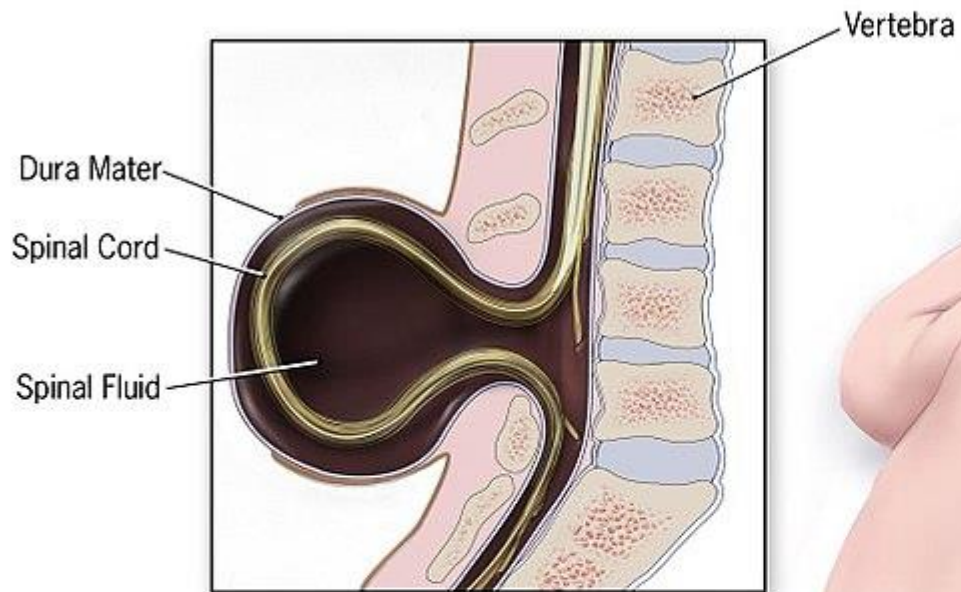


Diastematomyelia

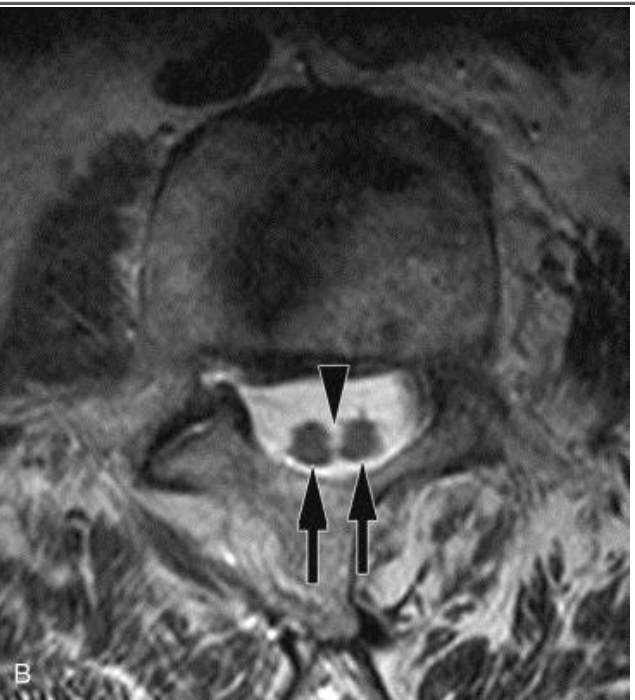
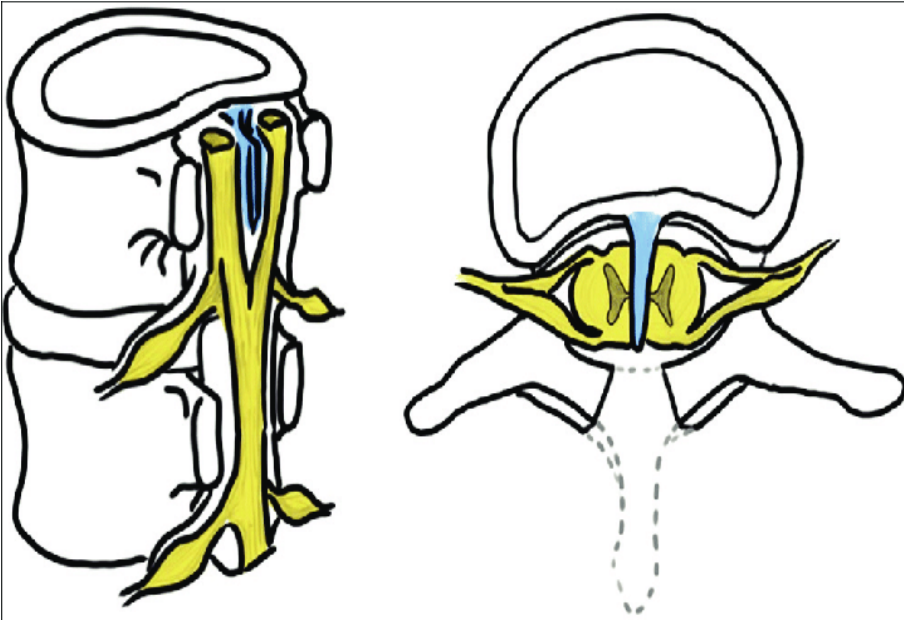
**Radiological Imaging in Spinal Dysraphism.**



## Spina Bifida (Open Defect)



**Diastematomyelia**, also known as a **split cord malformation**, refers to a type of [spinal dysraphism](#) (spina bifida occulta) when there is a longitudinal split in the [spinal cord](#).



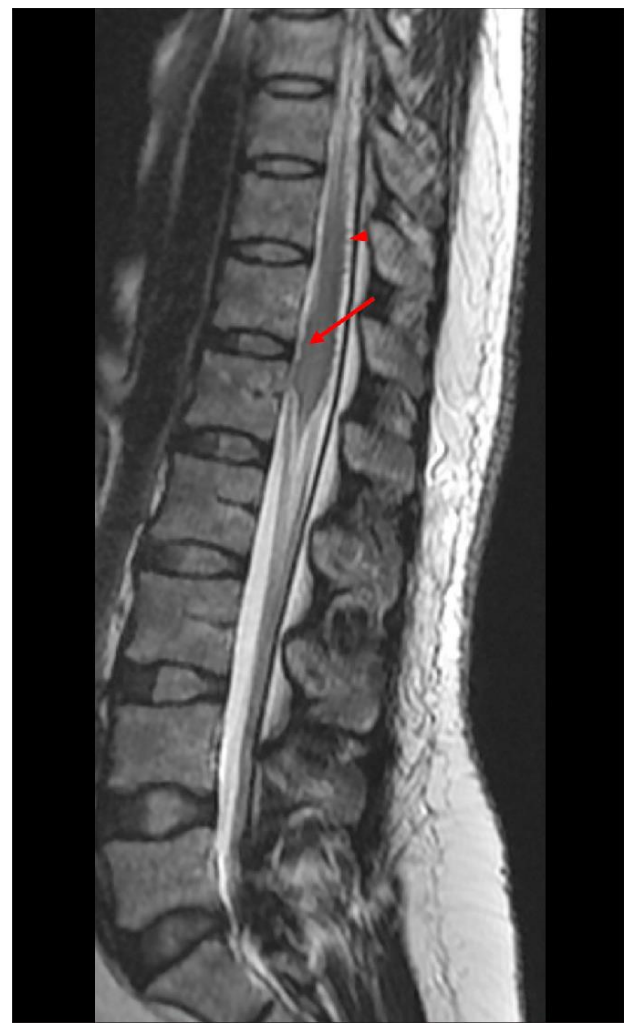
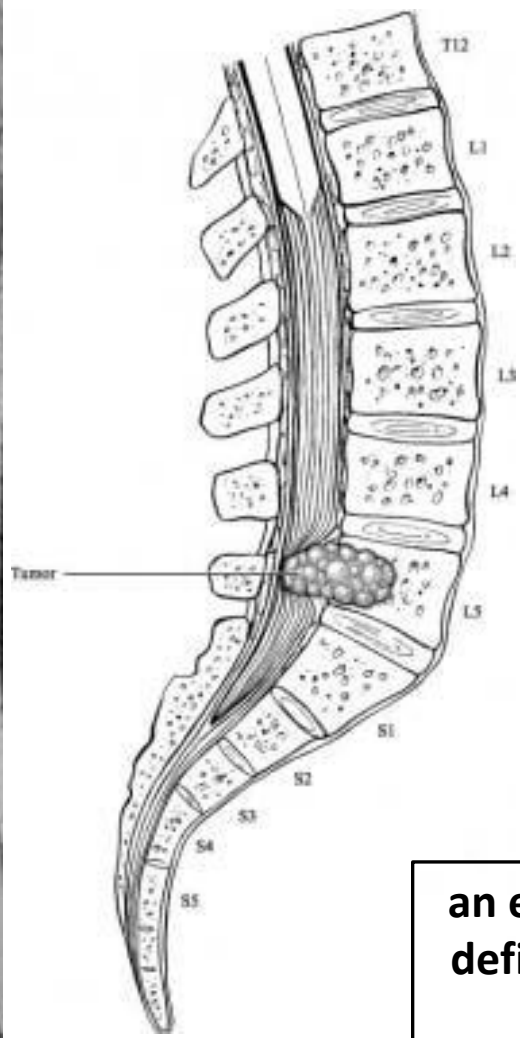
**Discitis** is a serious but uncommon medical diagnosis. It is an infection of the intervertebral disc space.

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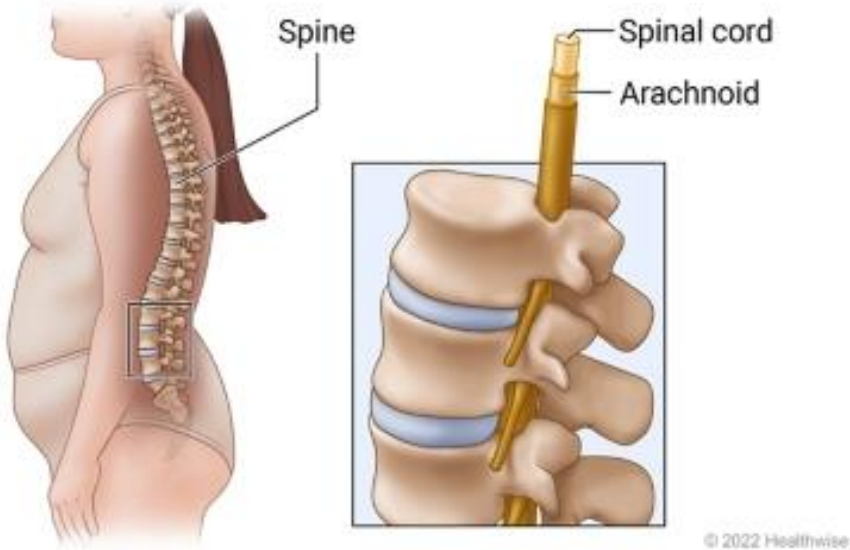
**discitis**

**The conus medullaris** refers to the lower end of the spinal cord that tapers off around the lumbar vertebrae.

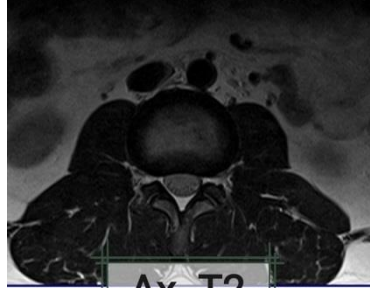


**an enlarged conus medullaris with diffuse ill-defined T2 hyperintensity at the T12-L1 level (arrow) in conjunction**

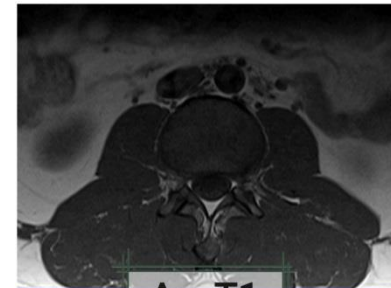
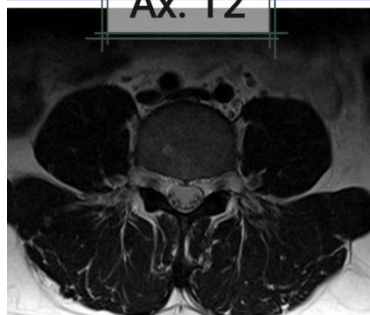
**Arachnoiditis** is a persistent inflammation of the arachnoid mater and subarachnoid space due to mechanical, chemical, or infectious causes.



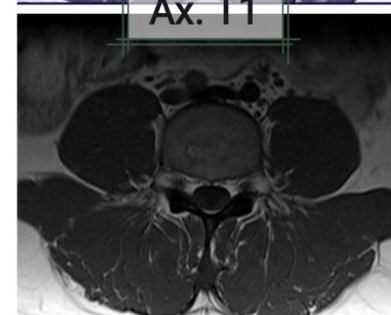
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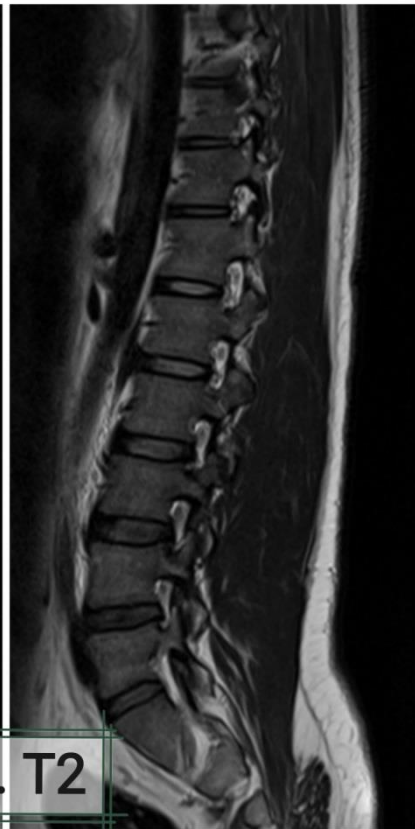
Ax. T2



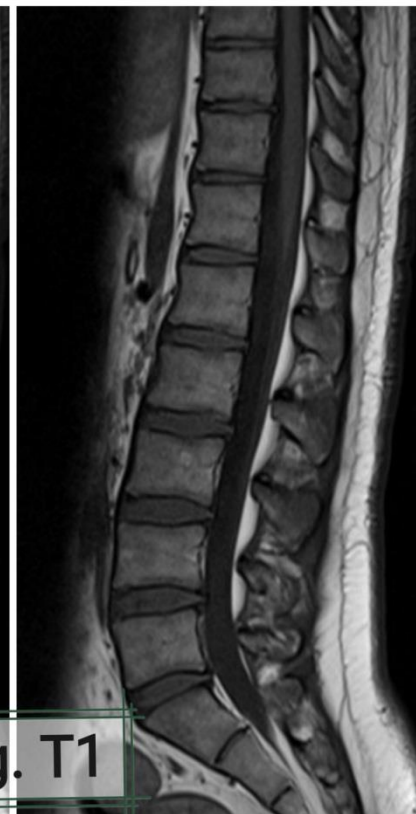
Ax. T1



Sag. T2



Sag. T1

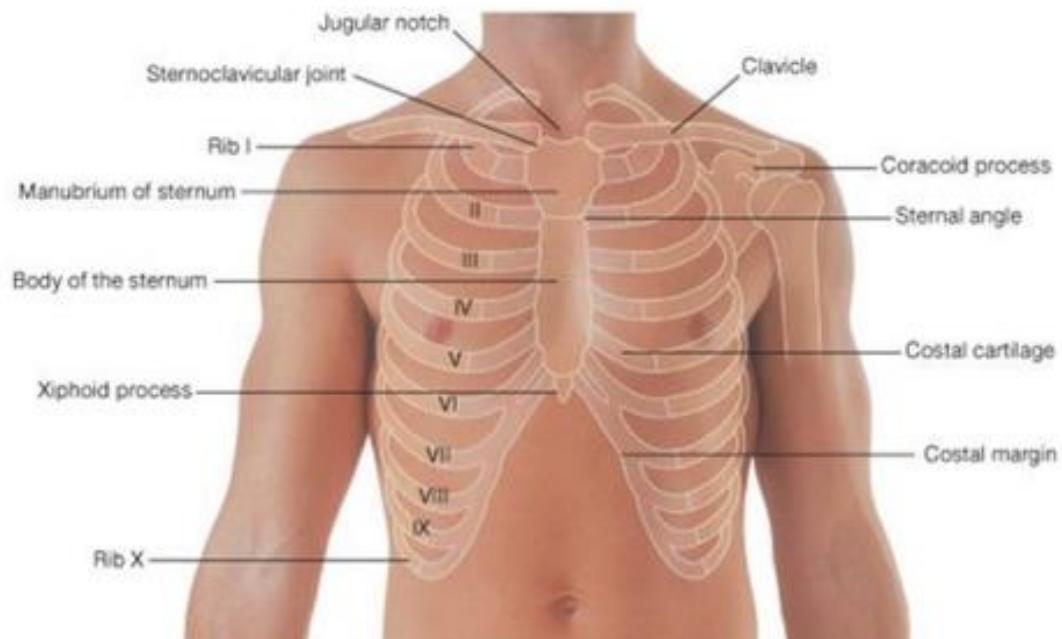
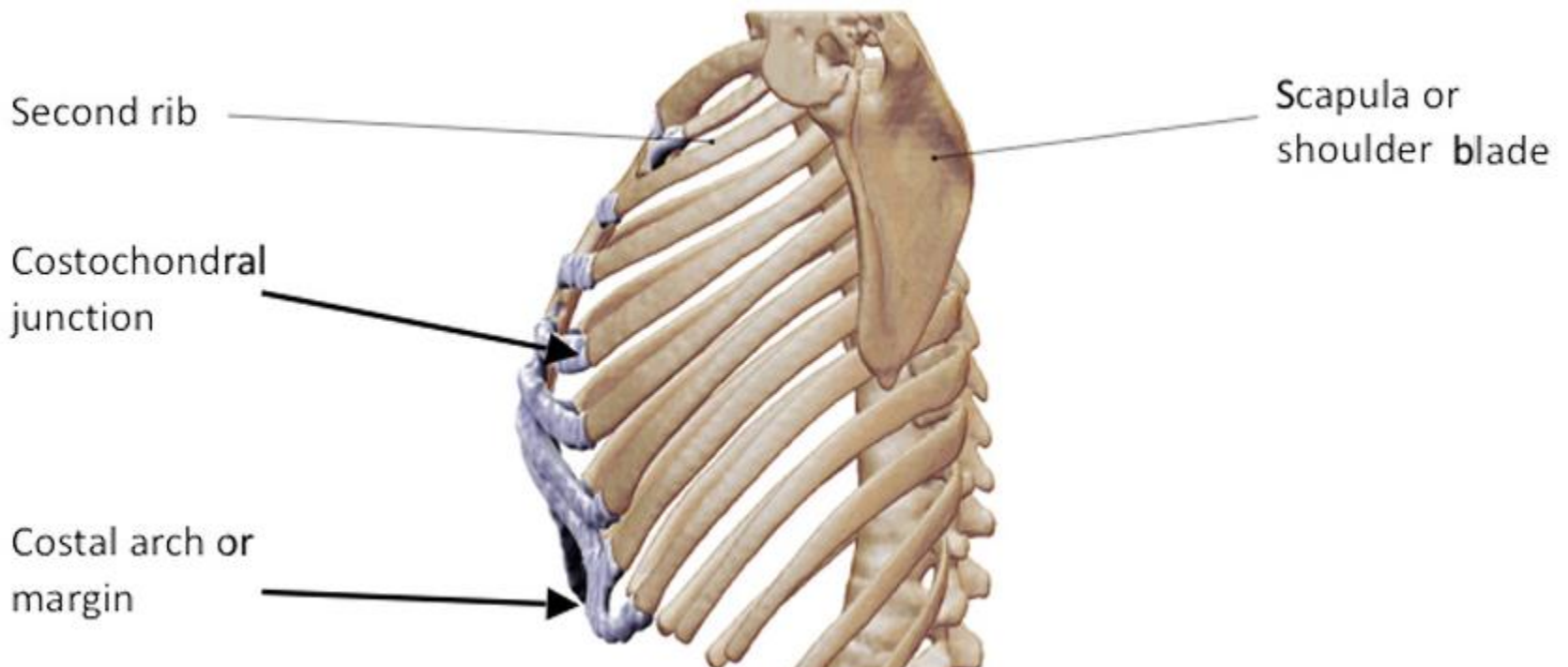




**Sag. gradient echo**

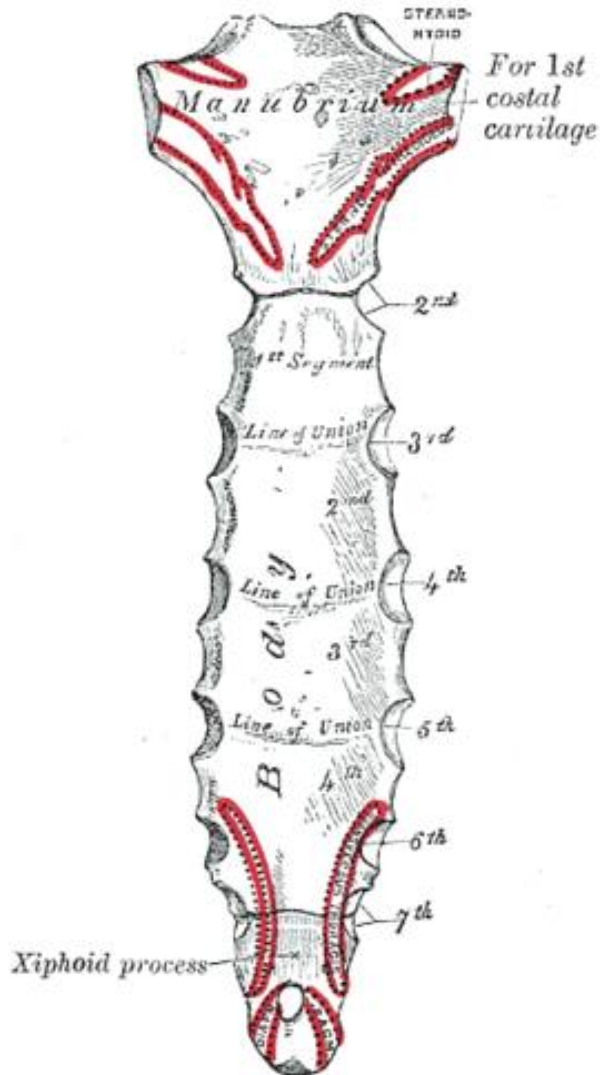


**Sag T2 STIR**



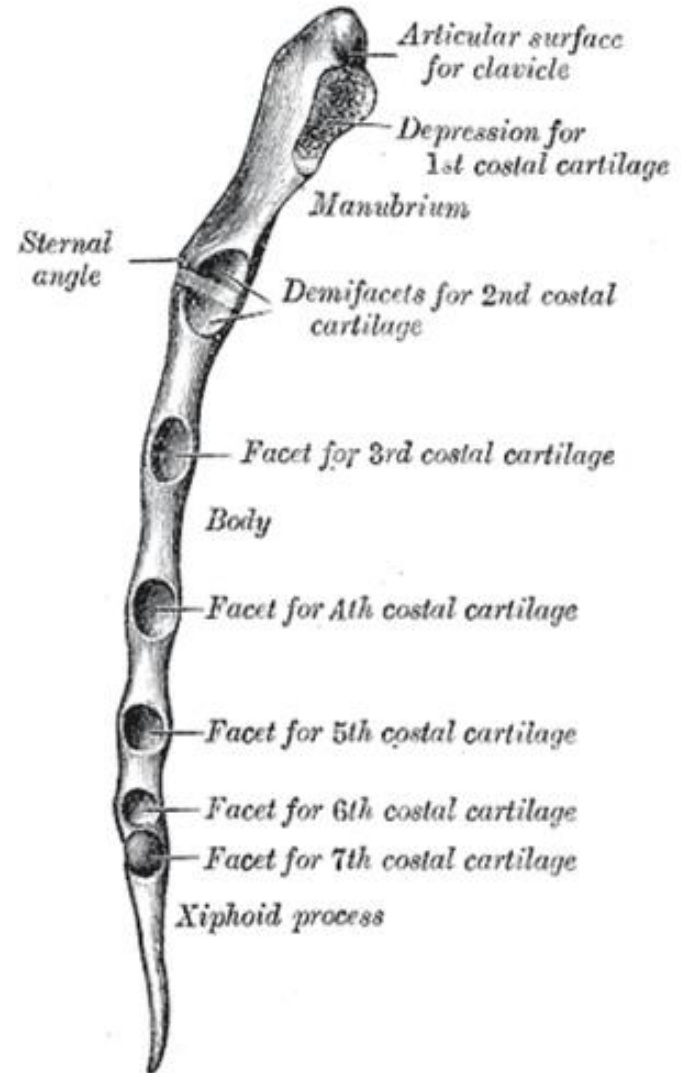
# Sternum

anterior view



# Sternum

lateral view



**Hemosiderin** is a protein compound that helps the body store iron. Too much built up beneath the skin can lead to staining or skin discoloration, known as hemosiderin staining or deposition, or hemosiderin hyperpigmentation.



**Left: Sagittal T 2-weighted MR image demonstrating hemosiderin deposition along the spinal cord. The hyperintensity in the lower cervical spinal cord is consistent with a previously unrecognized concomitant old spinal cord injury.**