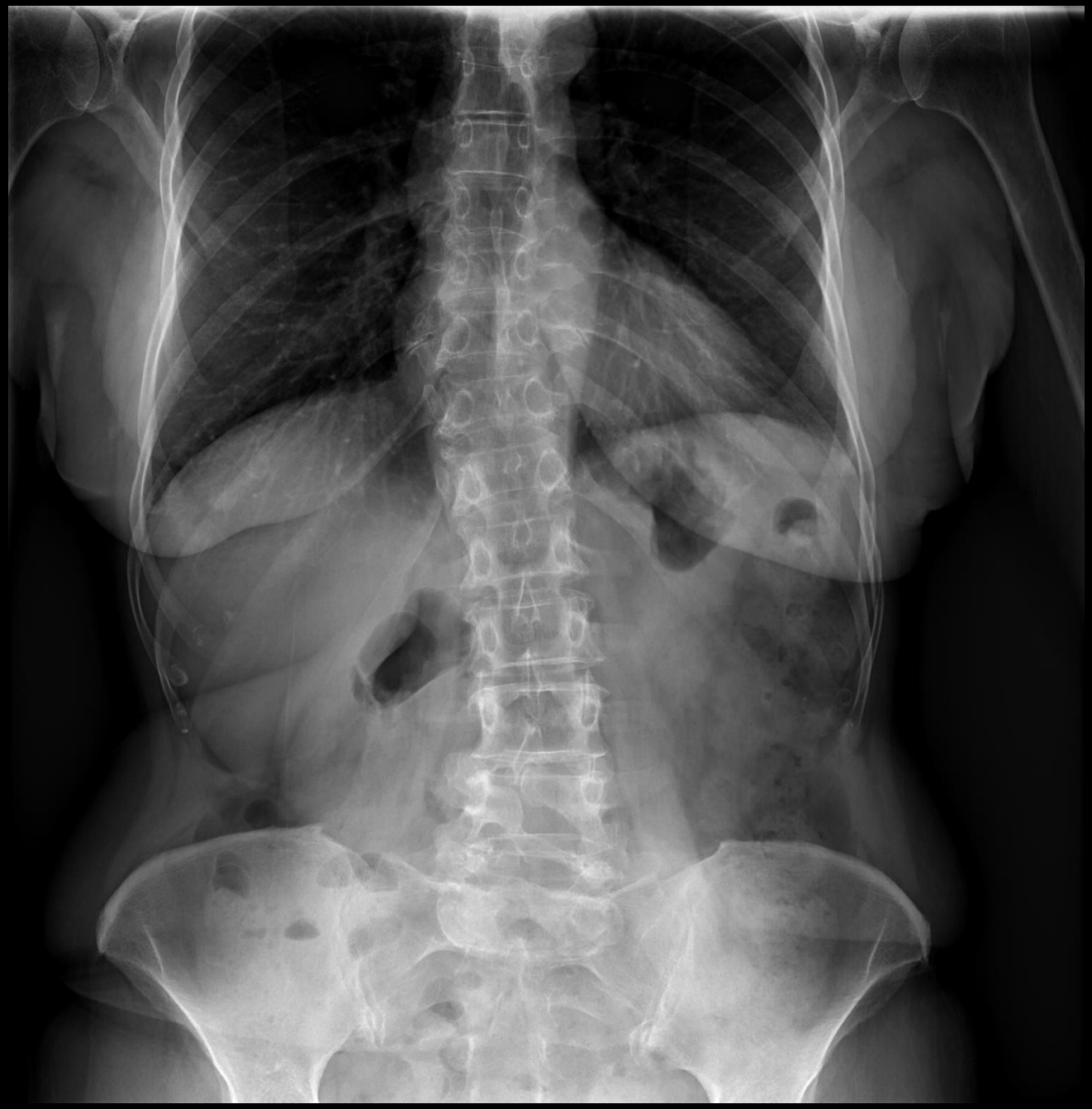
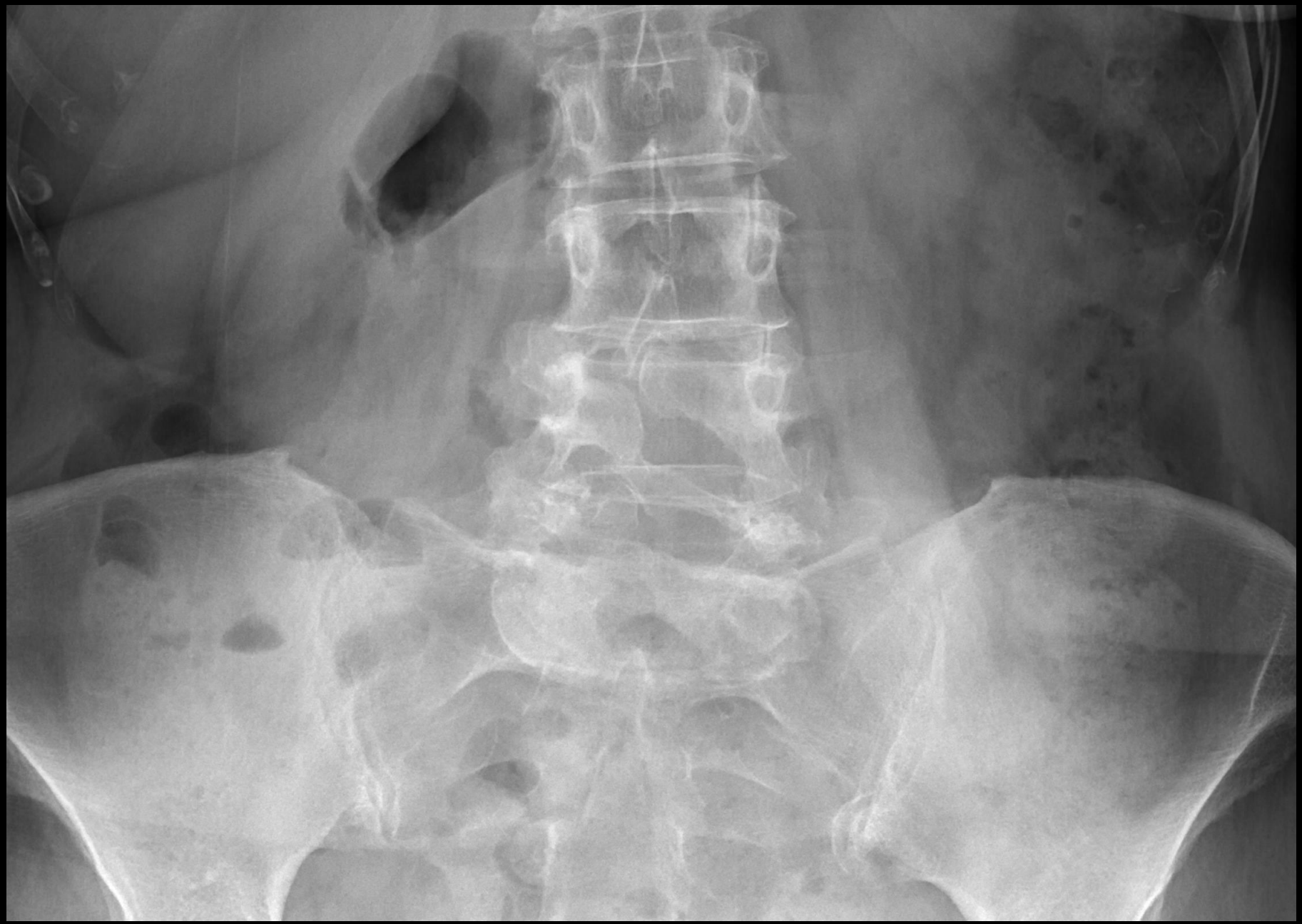
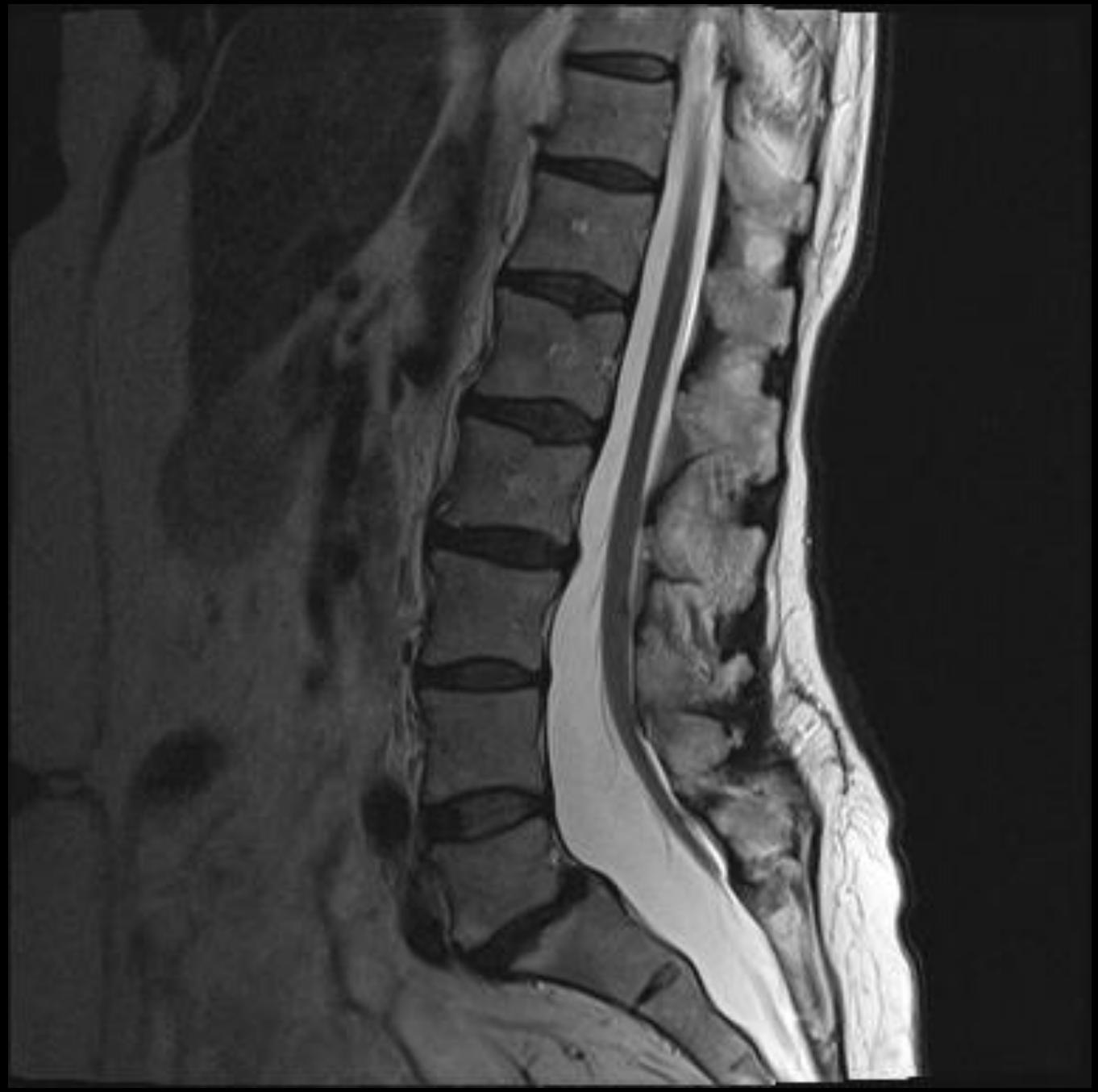
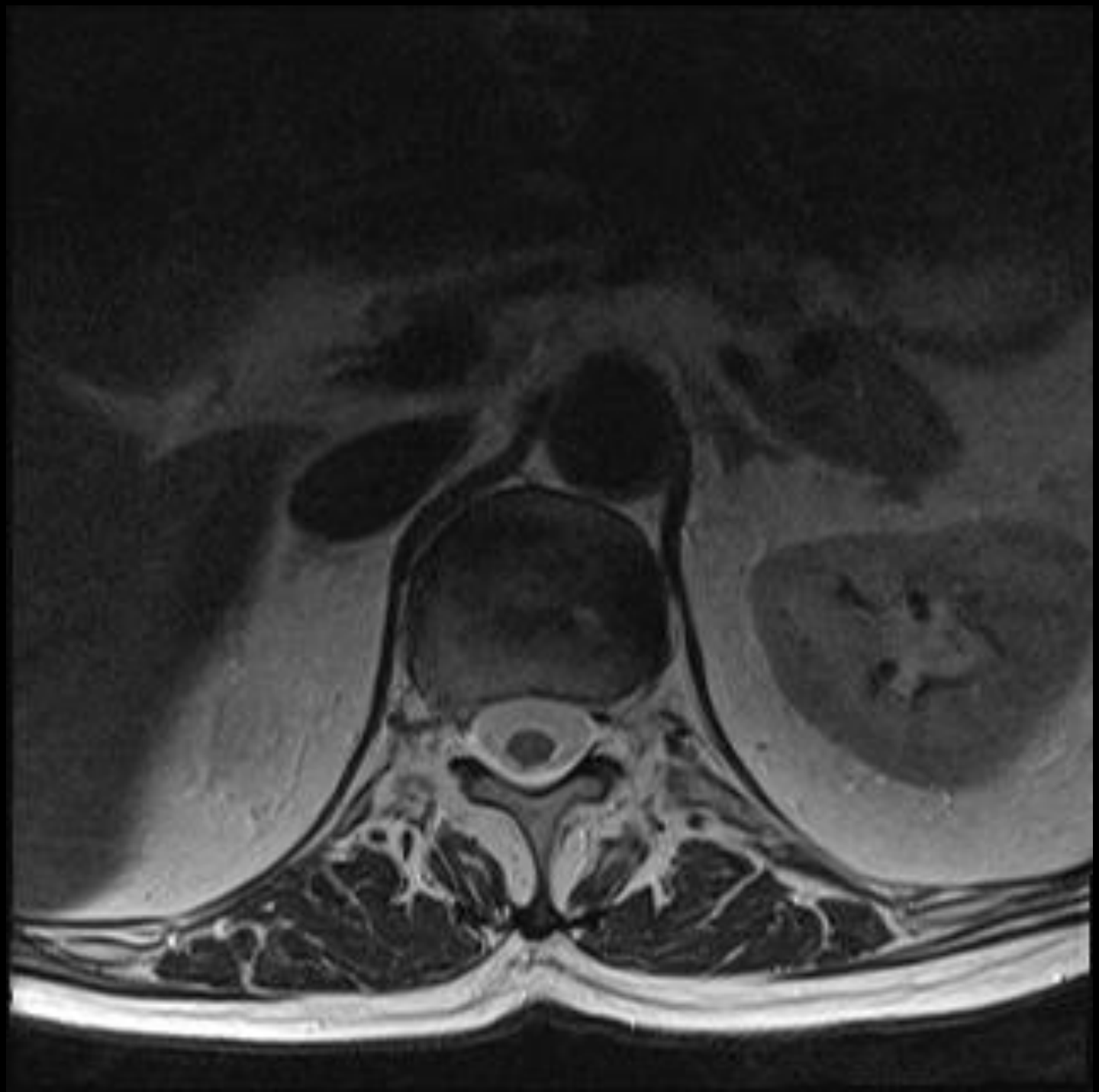
38 year old with chronic back pain and lower extremity spasm

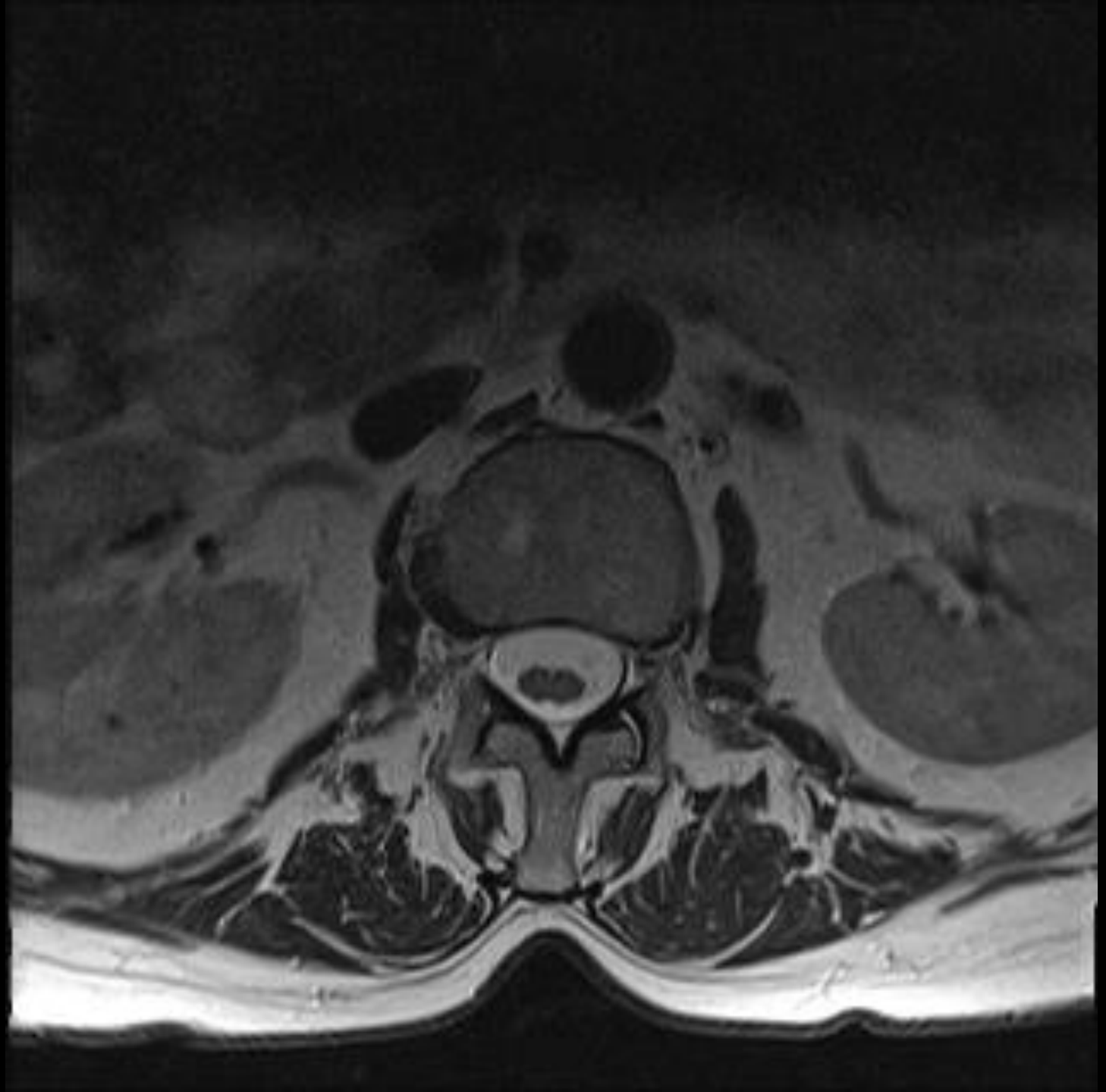
Donald Imwalle

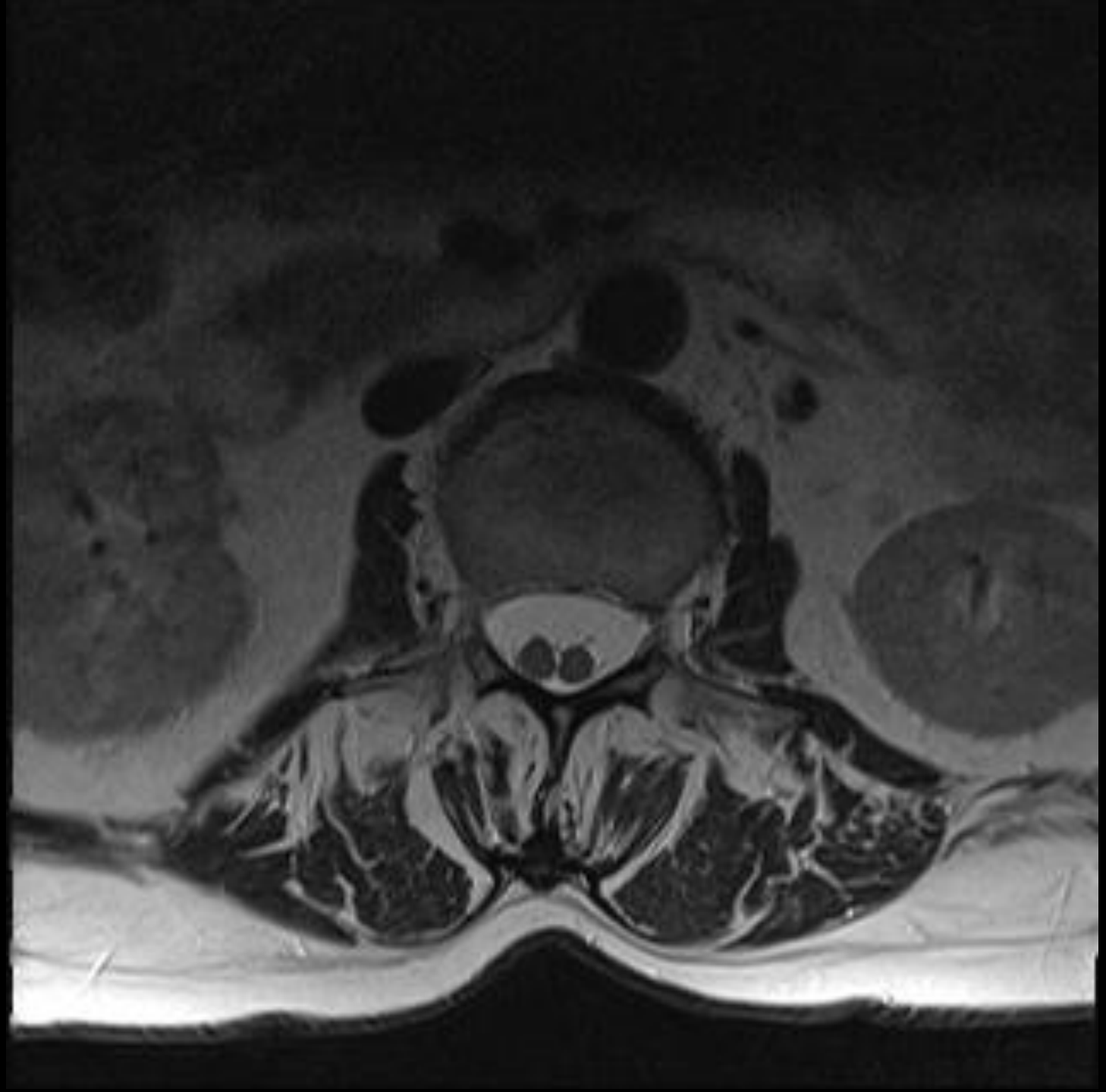


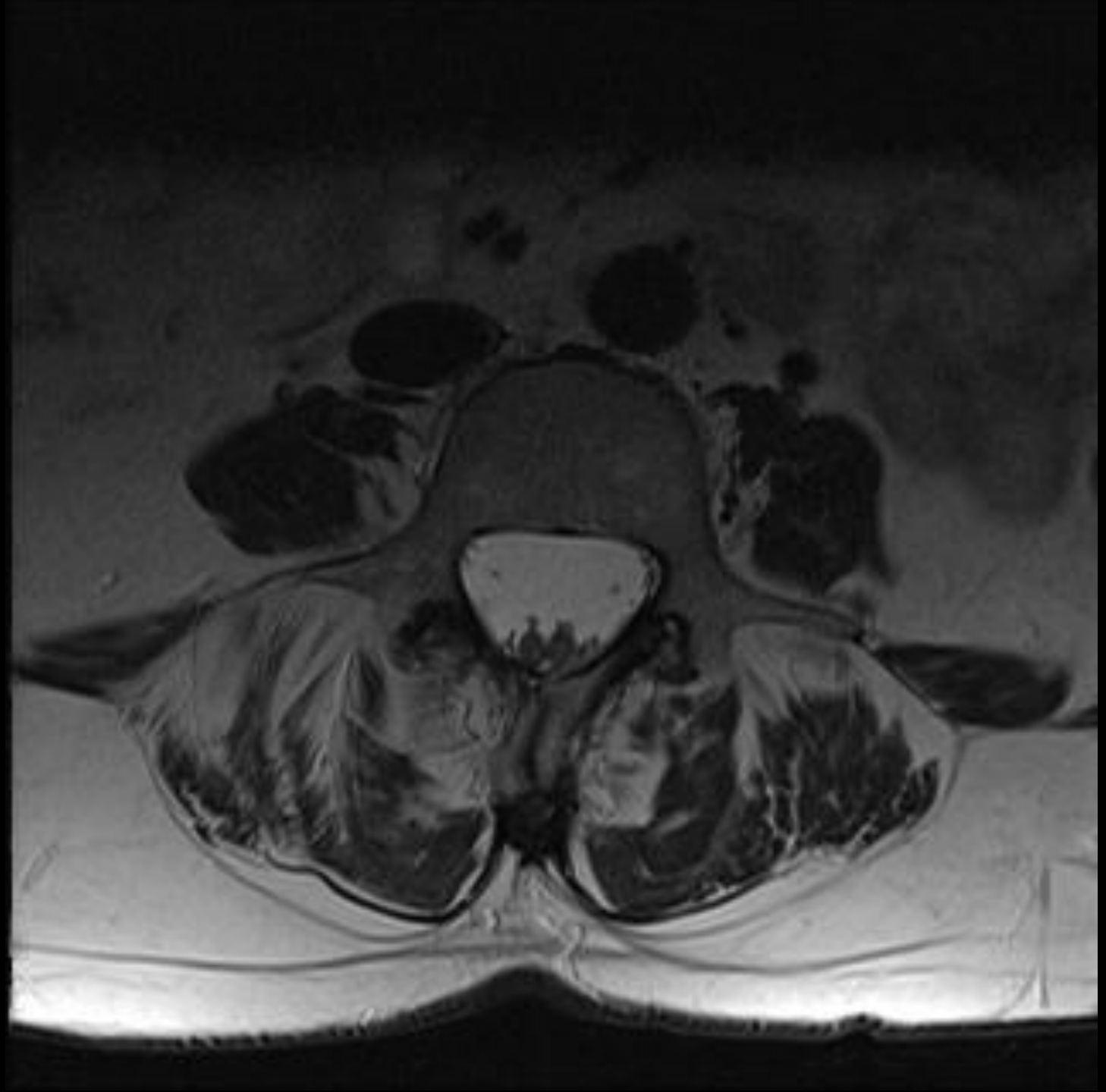


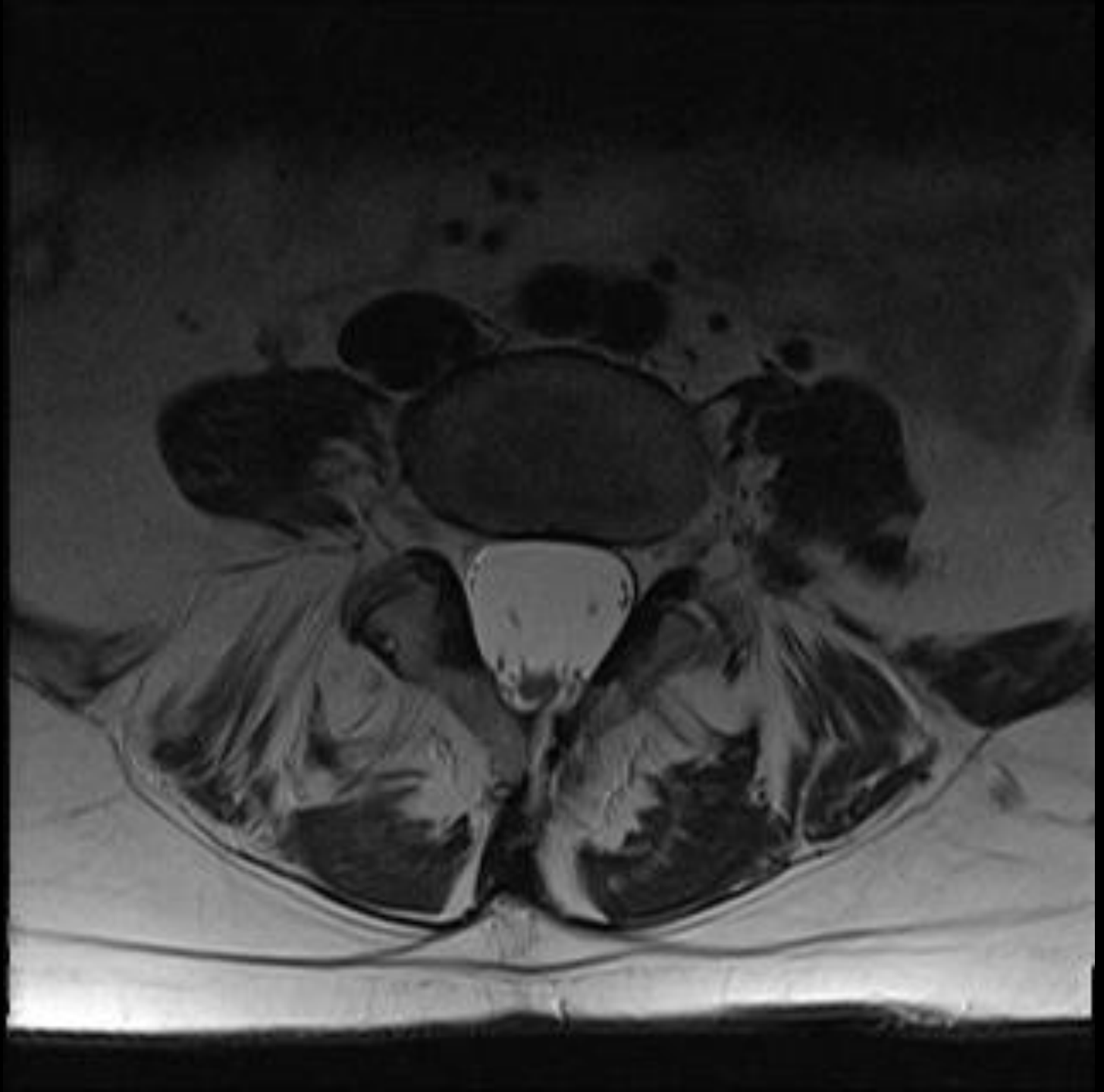






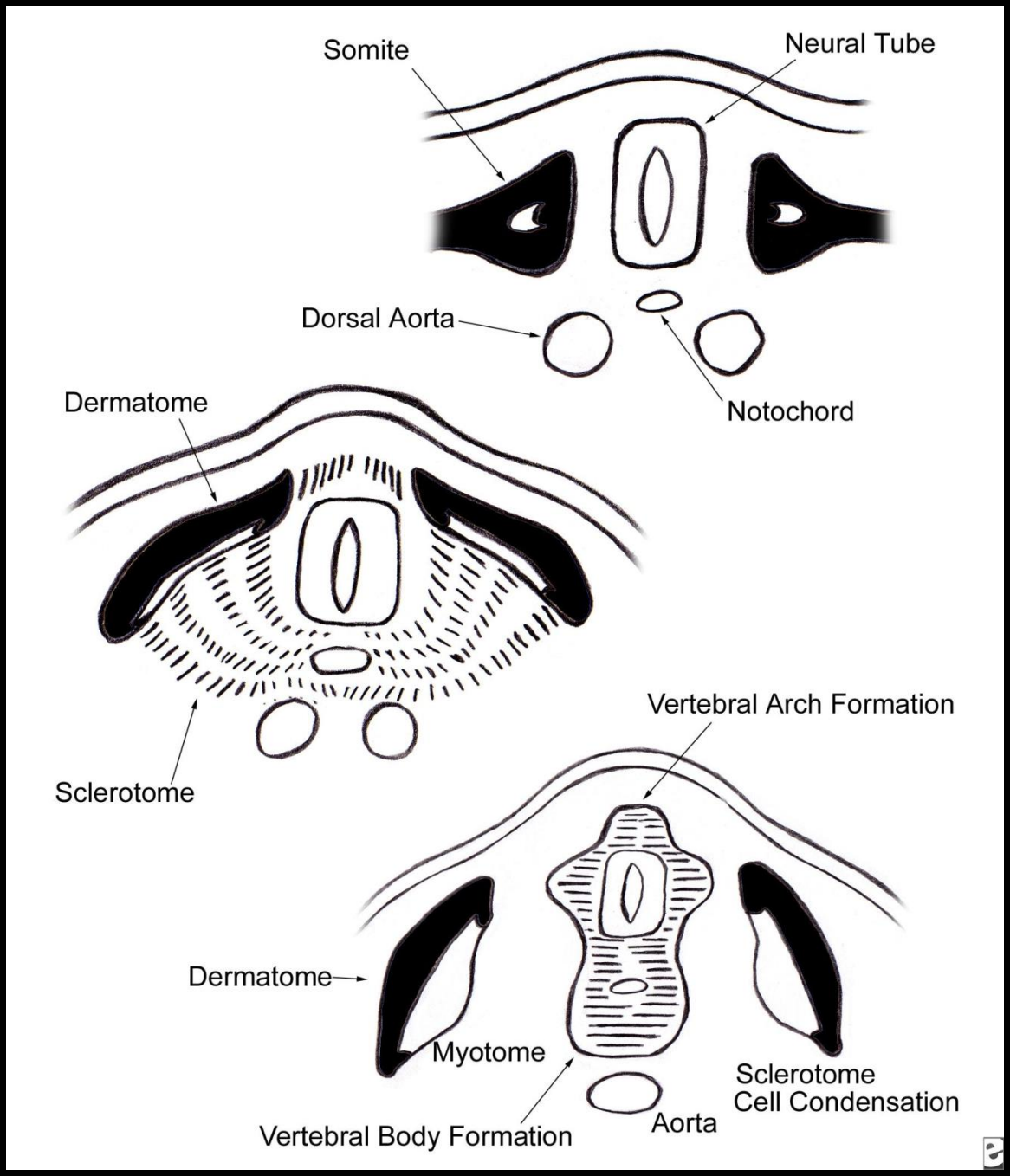


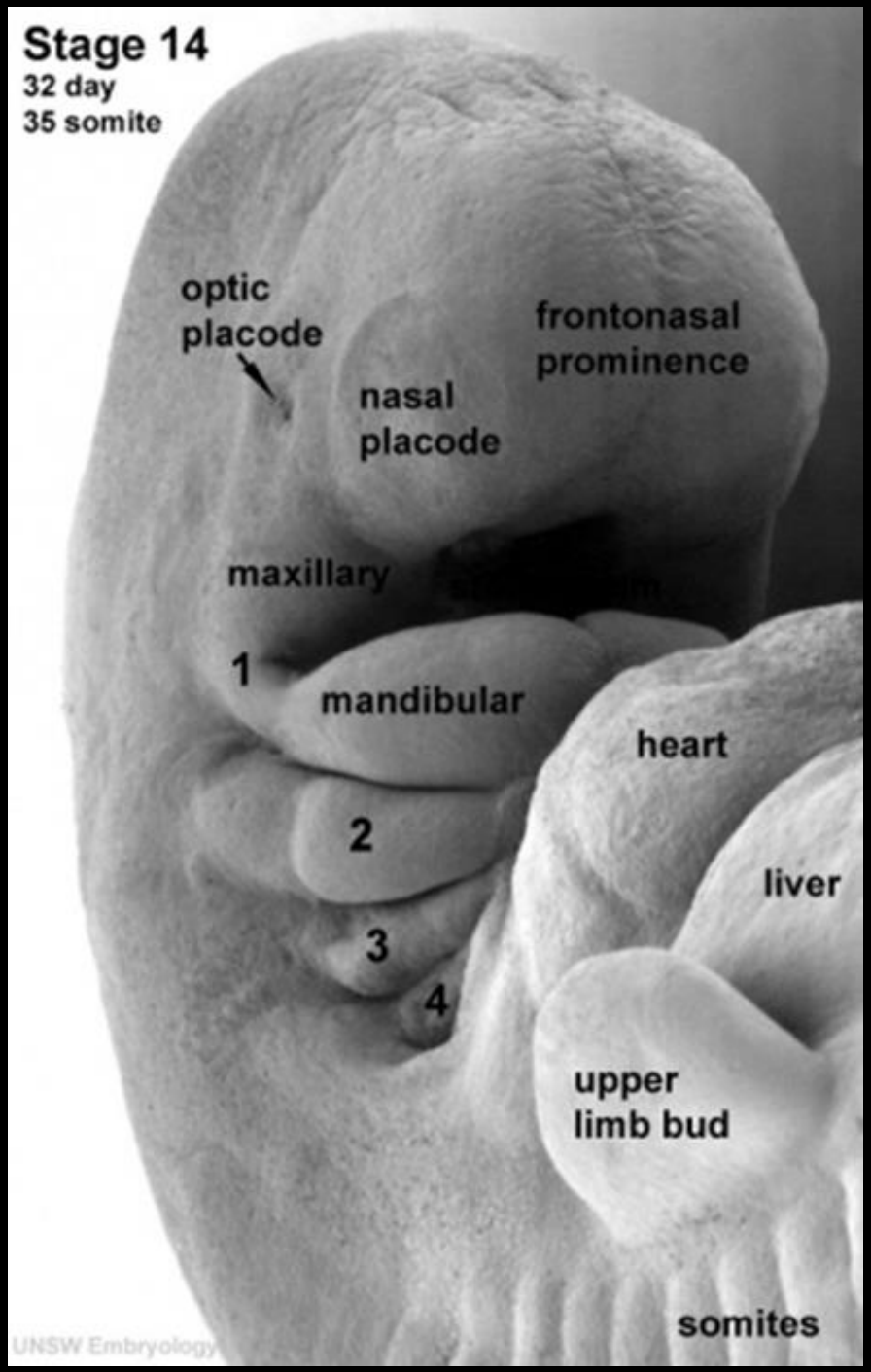




Spinal Dysraphism (manifest as spina bifida, tethered cord, and diastematomyelia)

- Broad term for a group of anomalies of dorsal malformations of the embryo
- Result of abnormal notochord development
  - Bunches of genes: Hox, GLUT1, HK1, LEP…
  - But strangely there's not much evidence of a congenital link to explain majority of cases




Stage 14
32 day
35 somite
optic placode
frontonasal prominence
nasal placode
maxillary
1
mandibular
heart
2
liver
3
4
upper limb bud
somites
UNSW Embryology

Spinal Dysraphism

- Open
  - Meningoceles
  - Myelomeningocele
- Closed
  - Thickened filum terminale
  - Dorsal dermal sinuses
  - Neurenteric cyst
  - Diastematomyelia

Diastematomyelia

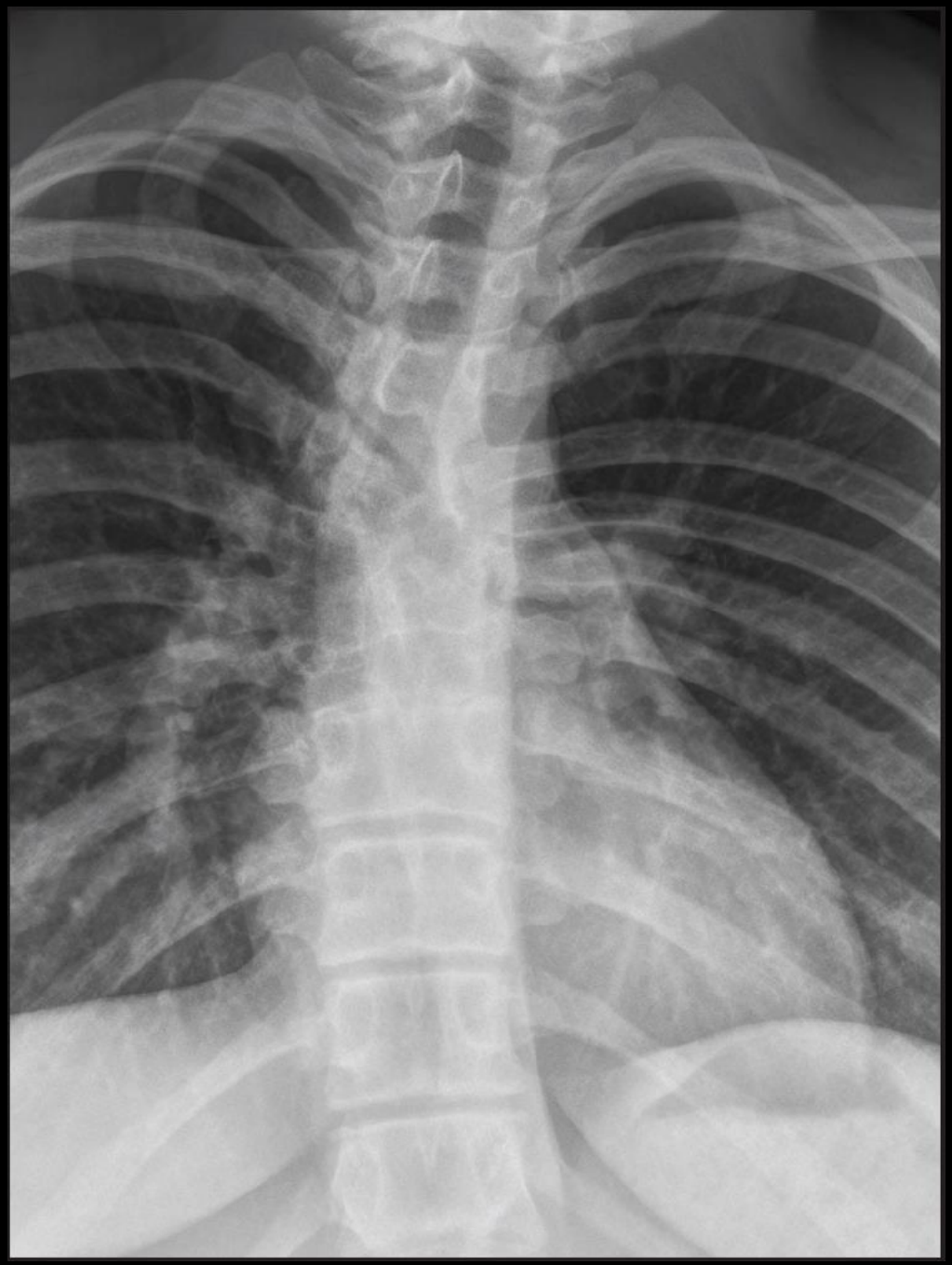
- Longitudinal split in the spinal cord
- AKA split cord malformation
- Two types:
  - Type I: Duplicated dural sac
  - Type II: Single dural sac containing both hemicords

Diagnosis

- X-ray
  - multilevel spina bifida
  - widening of the interpedicular distance
  - AP narrowing of vertebral bodies
- CT
  - All the above, plus delineation of the bony septum
- MRI
  - Modality of choice
  - Demonstrates the split cord, hydromelia, plus any of the associated anomalies
- Ultrasound
  - Antenatal ultrasound can detect

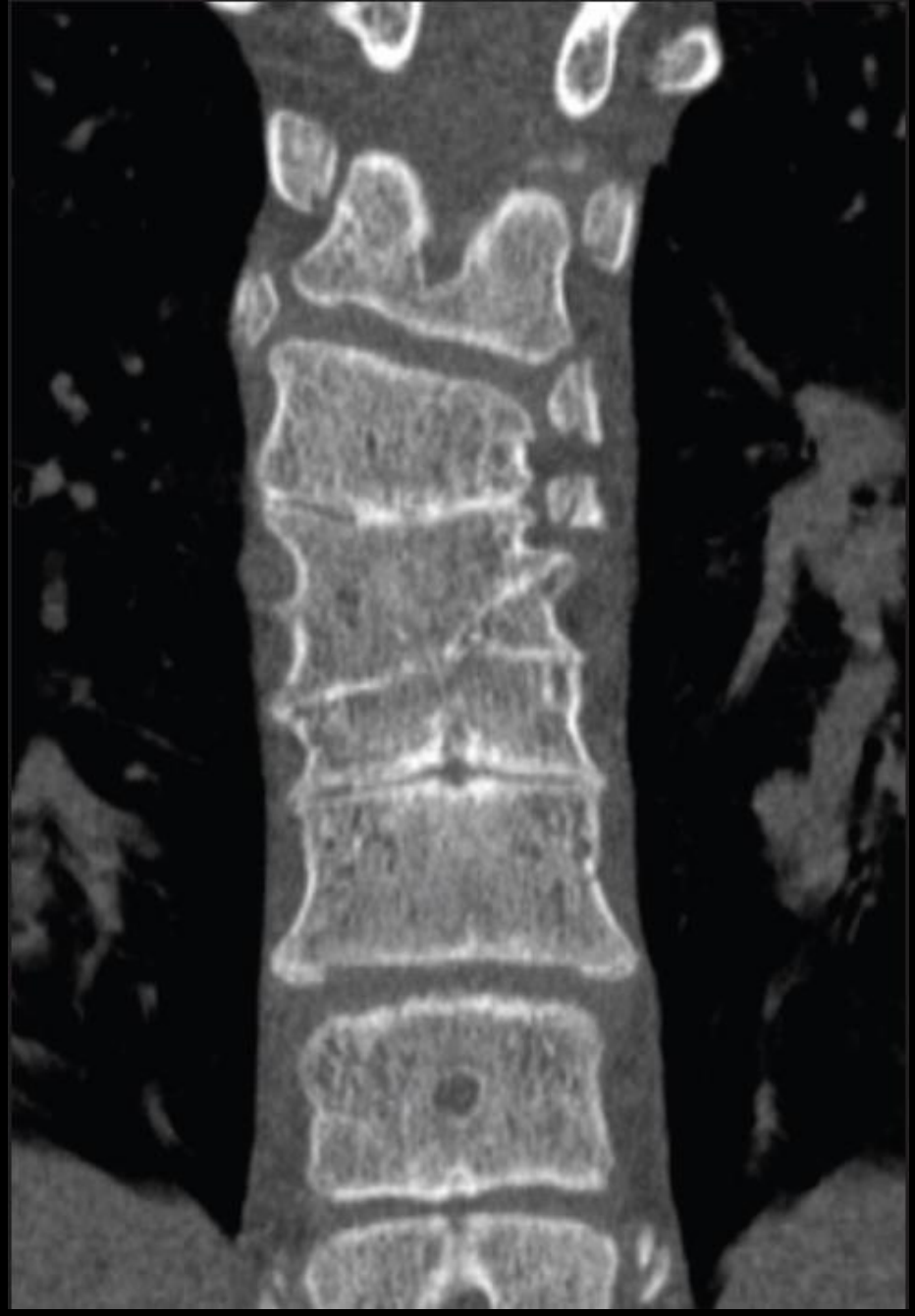
Type I

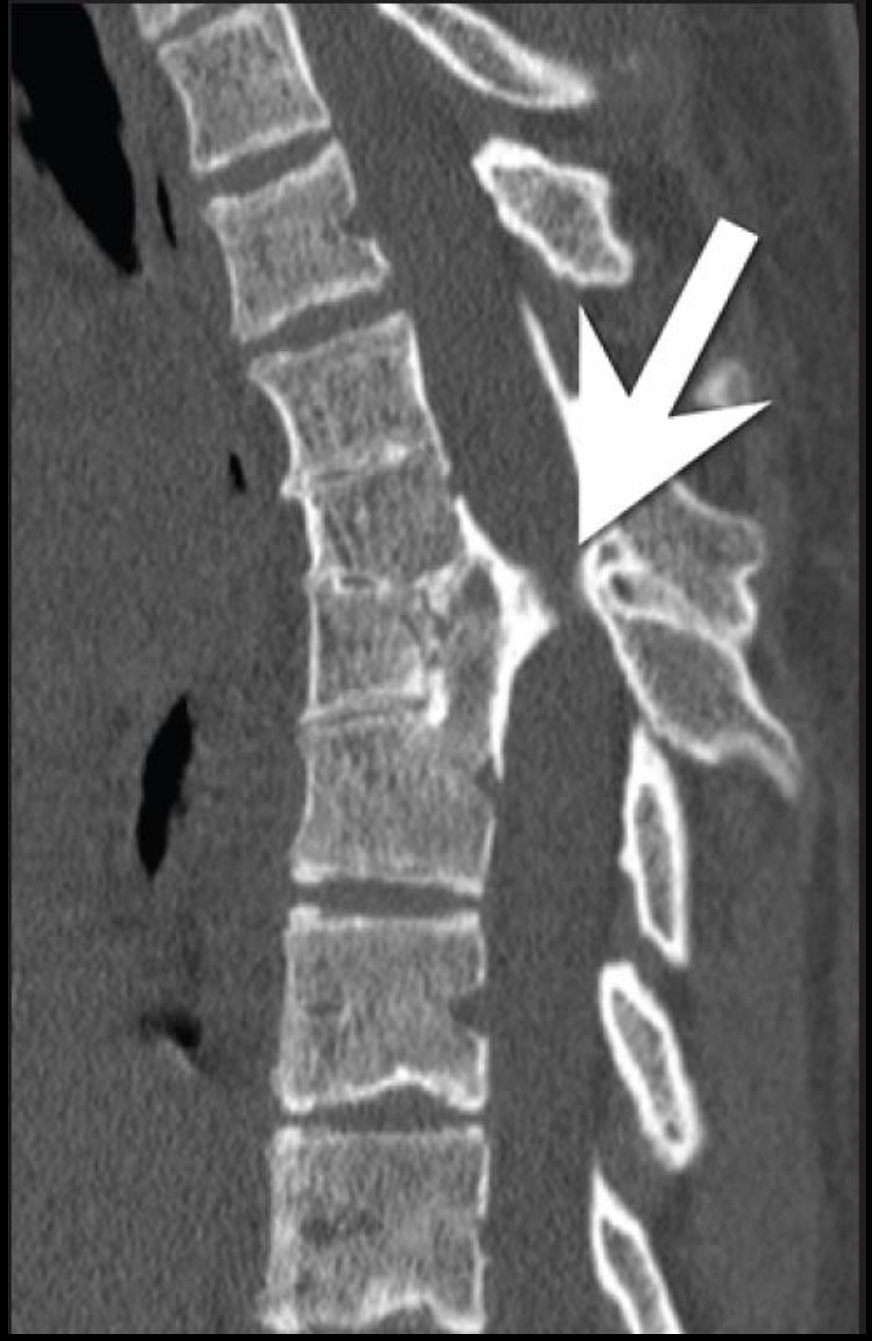
- Clinically more severe, earlier presentation
- Duplicated dural sac
- Midline spur, either osseous or osteocartilaginous
- Vertebral anomalies
- Skin lesions
- Scoliosis and tethered cord syndrome



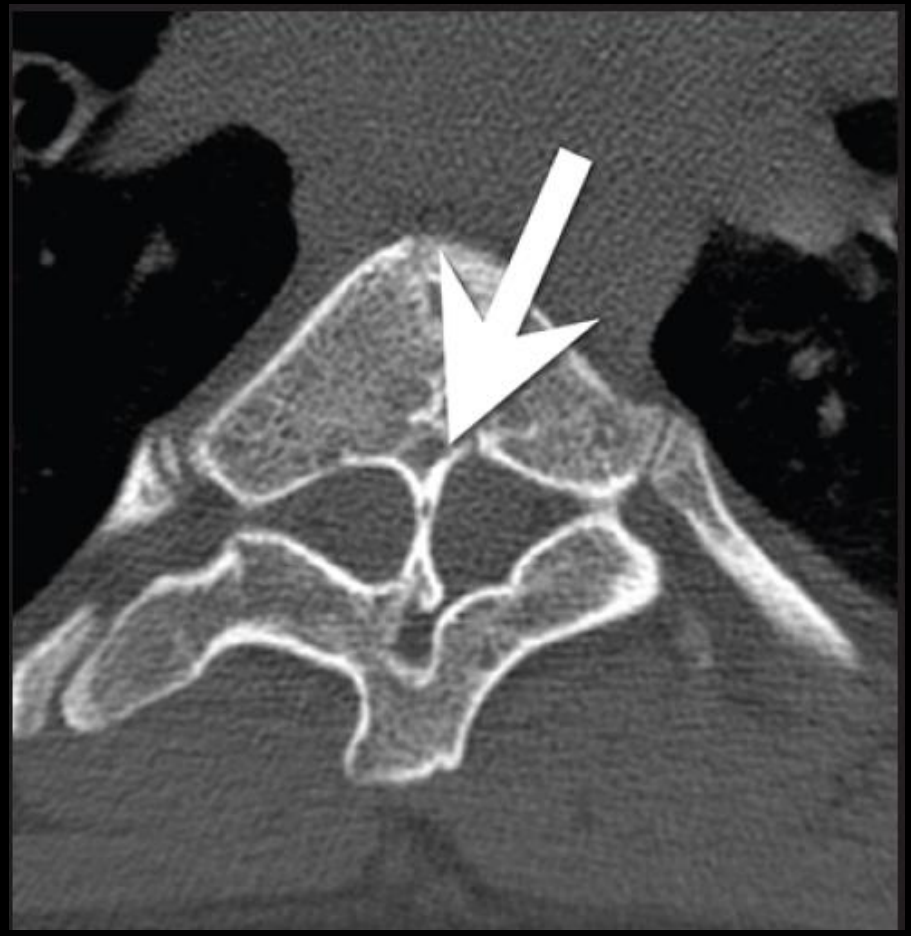
- 14 yo girl
- Numbness and tingling in legs
- Back pain
- Weakness
- Constipation

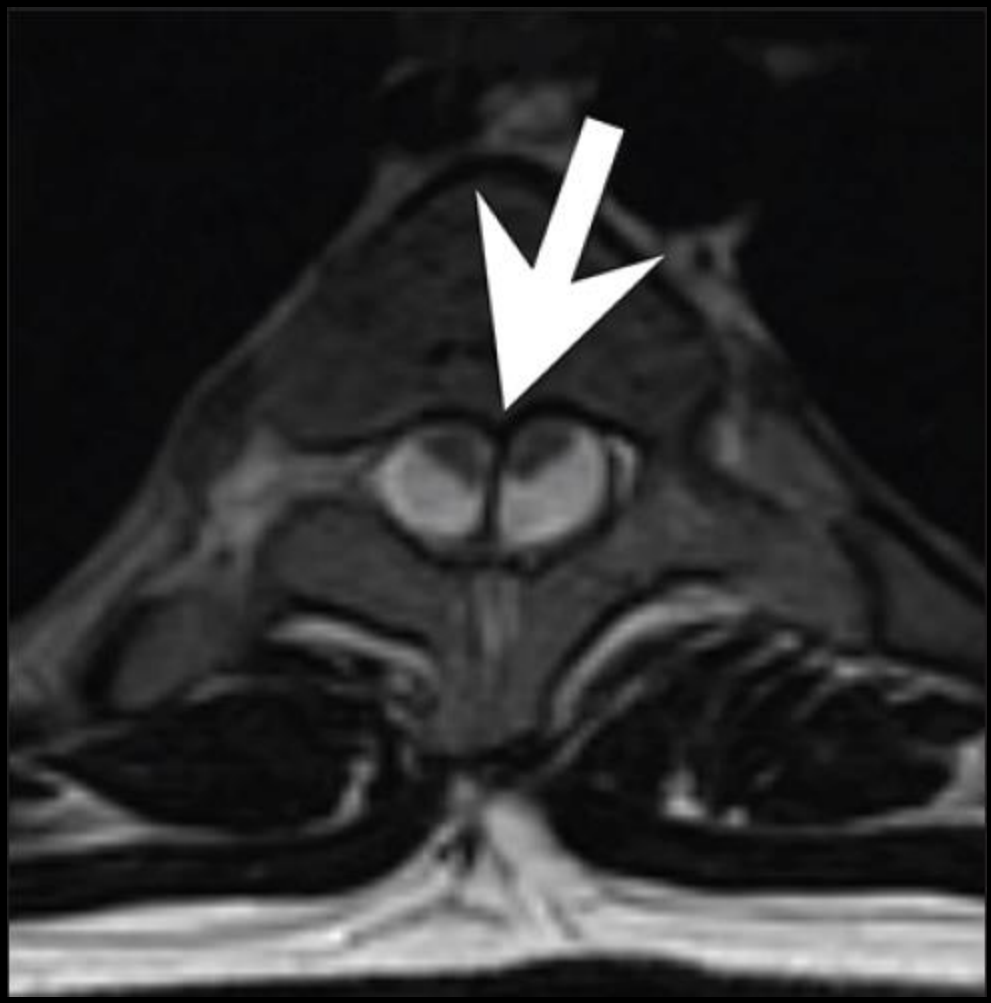
Aly, N, Towbin, A, Towbin, R.





Aly, N, Towbin, A, Towbin, R.





Aly, N, Towbin, A, Towbin, R.

Type II

- Milder form, even asymptomatic
- Single dural sac
- Sometimes hydromelia
- Spina bifida maybe present, but other vertebral anomalies much less common

Signs and Symptoms

- Asymptomatic at birth
- Gradually…
  - Bowel and bladder dysfunction
  - Motor and sensory dysfunction
  - Progressive pain
- Can be associated with visceral malformations, skin abnormalities

Treatment

- Conservative, if patient is asymptomatic
- If symptomatic:
  - Surgical decompression
  - Removal of bony spur and reconstruct dura around the separated cords
  - Release of tethered cord

References

1. Aly, N, Towbin, A, Towbin, R. Pediatric Radiological Case: Diastomatomyelia. Applied Radiology. 2014 Sept.
2. Kang, O, Salam, H. Diastomatomyelia. www.radiopaedia.org
3. Knipe, H. Spinal Dysraphism. www.radiopaedia.org.
4. Lee, M. Congenital Spinal Deformity. www.emedicine.com, updated 20 Feb 2015.
5. Zaleska-Dorobisz, U, Bladowska, J, Biel, A, Palka, L, Holownia, D. MRI diagnosis of diastomatomyelia in a 78-year-old woman: Case report and literature review. Pol J Radiol. 2010 Apr-Jun; 75(2): 82–87.