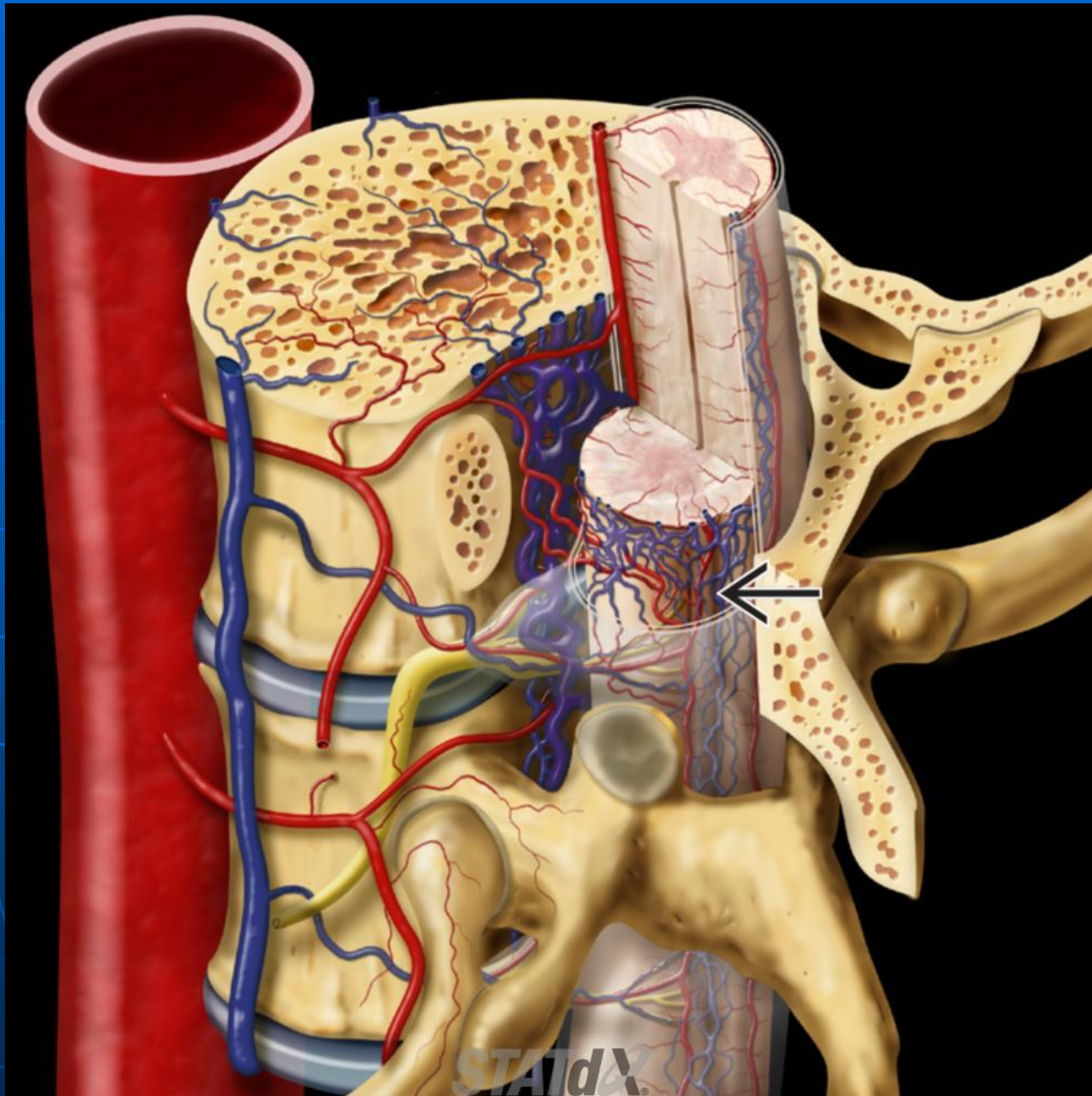


# Type 4 Vascular Malformation (AVF)

- Synonyms: Perimedullary fistula; type 4 spinal vascular malformation, pial arteriovenous fistula (AVF)
- Direct intradural extramedullary arterial/venous communication from ASA, or PSA to draining vein without capillary bed
- > 90% of patients present with neurological deficits
  - Hemorrhage at presentation in 36%
- Embolization or surgical resection based upon anatomy and size: Surgical resection, surgical resection or embolization, embolization



Coronal oblique graphic of the thoracic cord shows the intradural site of arteriovenous fistula (AVF, type 4) on the dorsal cord surface with diffuse venous engorgement (black solid arrow). A fistula is more typically along the ventral cord surface.



Sagittal T2 MR shows multiple serpentine intradural extramedullary flow voids dorsal to the thoracic cord, plus focal cord abnormality (cyan open arrow) due to a high-flow aneurysm.

# Spinal arteriovenous malformations

## ■ Imaging

- Hyperintense cord + flow voids
- Intradural location for fistula, adjacent to cord
- Draining veins may be pronounced on dorsal or ventral surface of cord
- Feeding vessel from ASA or PSA connects directly with spinal vein (no nidus)

## ■ Associations

- Hereditary hemorrhagic telangiectasia
- Cobb syndrome
- Klippel-Trénaunay-Weber syndrome