Spinal Cord Development

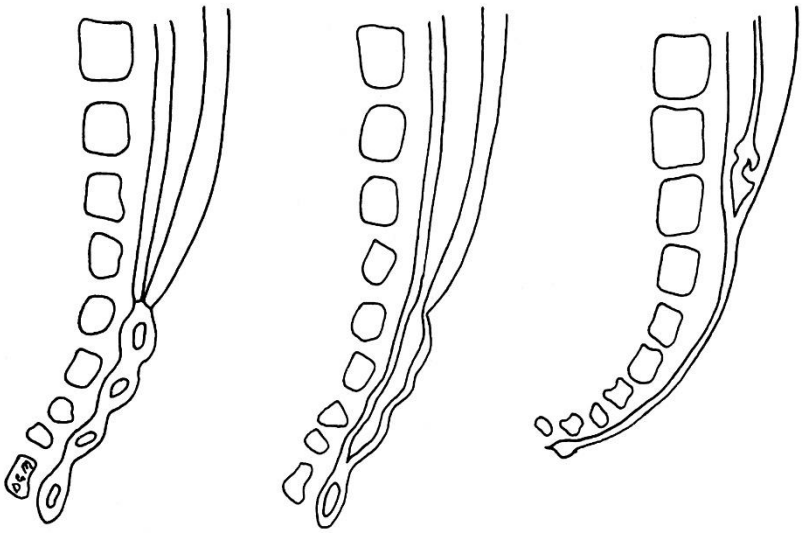
Last updated: April 20, 2019

DISTAL SPINAL CORD development (SECONDARY NEURULATION)

- formation of neural tube below caudal neuropore (caudal neuropore is located in lower lumbar region)

- *after neurulation (primary neurulation) is complete*, distal (sacrococcygeal) spinal cord begins to form as caudal end of neural tube blends into **CAUDAL CELL MASS** (large mass of undifferentiated pluripotential cells that eventually give rise to components of nervous, urogenital, and digestive systems - common association of anomalies in these systems).
- **canalization** - within caudal cell mass, small vacuoles form, coalesce, and eventually connect with central canal of spinal cord.
- distal spinal cord then begins **retrogressive differentiation** (continues for ≈ 7 weeks), leaving ***conus medullaris*** and ***filum terminale***.

Formation of caudal spinal cord: vacuolization *(A)* and coalescence of caudal cell mass *(B)*; formation of filum terminale *(C)*:



Disorders of secondary neurulation (e.g. tethered filum) → **occult dysraphic states** (abnormalities of sacrococcygeal segments beneath intact dermal elements; no exposed neural tissue). see p. Dev5 >>

- these anomalies (sacral agenesis, conus hypoplasia) may be associated with other abnormalities (imperforate anus, malformed genitalia, renal dysplasias, etc) - as part of broader ***caudal regression syndrome***.

BIBLIOGRAPHY for ch. "General Development" → follow this LINK >>