Anatomy of Cranial Dural Changes and Other Functional Results of Trauma

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CRANIAL DURAL SOMATIC DYSFUNCTIONS

- PREDOMINANTLY FUNCTIONAL: Reciprocal Tension Membrane Membranous Articular Strains

- FUNCTIONAL TREATMENT is preferred for these very common encounters
CRANIAL DURAL SOMATIC DYSFUNCTIONS

• STRUCTURAL RESULTS OF TRAUMA — are less prevalent — following Surgery, Fracture/Tear, Hemorrhage, Inflammation, Adhesion, etc.

• FUNCTIONAL treatment is preferred in most of these cases — even if structural damage persists
Analogous Events In Spine

• Structural changes as functional results of trauma
• Herniated intervertebral discs
FUNCTIONAL CAUSES OF INTERVERTEBRAL DISC CHANGES

• Spinal Disc herniations attract clinical attention

• Vertebral Spine paradigms are well known to the osteopathic profession

• We will consider STRUCTURAL changes resulting from FUNCTIONAL sequelae long after TRAUMA
ANATOMICAL CHANGES TO SPINAL DISCS DUE TO TRAUMA

- Sometimes HIGH-IMPACT TRAUMA directly causes the STRUCTURAL disc damage that we can see on MRI (e.g. bulging or herniation)... by trauma vectors directly impacting an intervertebral disc.

- More often the disc herniates or degenerates WITHOUT RECENT IMPACT TRAUMA, long after any significant injury or other change to the body.
MRI Showing Lower Lumbar Discs with Degeneration and Herniation
MOST OF THE SPINAL DISC CHANGES THAT WE SEE ON MRI (e.g. herniation, dessication, compression or degeneration) OCCUR WITHOUT ANY RECENT HIGH-IMPACT TRAUMA

Why?
COMMON MECHANISMS OF SPINAL DISC CHANGES

• TRAUMA causes injury to adjacent segments well above or below a disc in question – commonly resulting in FUNCTIONAL limitations – like restrictions we see at transitional spinal junctions:
  T12 –L1
  Sacrum

• Lumbar Disc Herniations are associated with motion restrictions at T12-L1 or Sacrum.
COMMON MECHANISMS OF SPINAL DISC CHANGES

• DISC HERNIATIONS then occur later in adjacent non-traumatized segments due to compensatory hyper-mobility, weakening annular ligamentous fibers, etc.

• L4-5 or L5-S1 Discs herniate more than all other T or L spine discs combined

• Osteopathic treatment of choice for these herniated discs usually involves treatment of the Sacrum and T-L junction.
L5-S1 Disc Herniation
L4-5 & L5 - S1 Disc Herniation
SAME ISSUES DOMINATE CERVICAL SPINAL DISC HERNIATIONS

e.g. Cervical Disc Herniations are associated with motion restrictions at Cervico-Thoracic (C7-T1, T1-T2) transitional junction or Cranial-Vertebral junction (O-M, O-A, A-A).
MRI
C5-6
Herniated Disc
MRI shows C6-7 Herniated Disc
MRI shows C5-6 & C6-7 Herniated Discs
SAME ISSUES MAY PERTAIN TO ANATOMICAL CHANGES IN CRANIAL RECIPROCAL TENSION MEMBRANES

Holes in Falx Cerebri found in association with Ossification of Cranial Vault Sutures (and presumably decreased cranial compliance).
THANK YOU