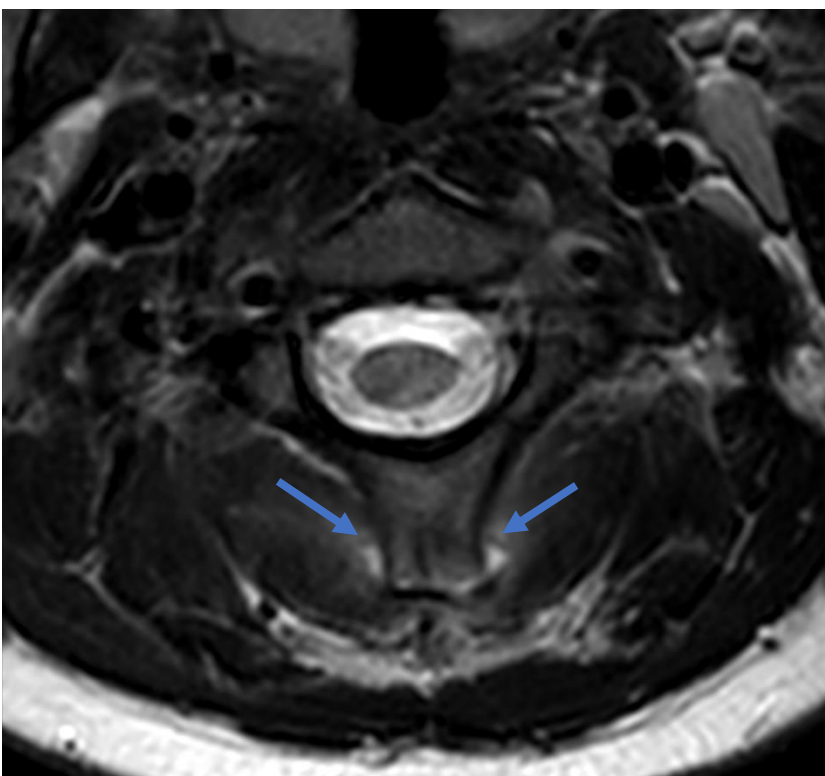
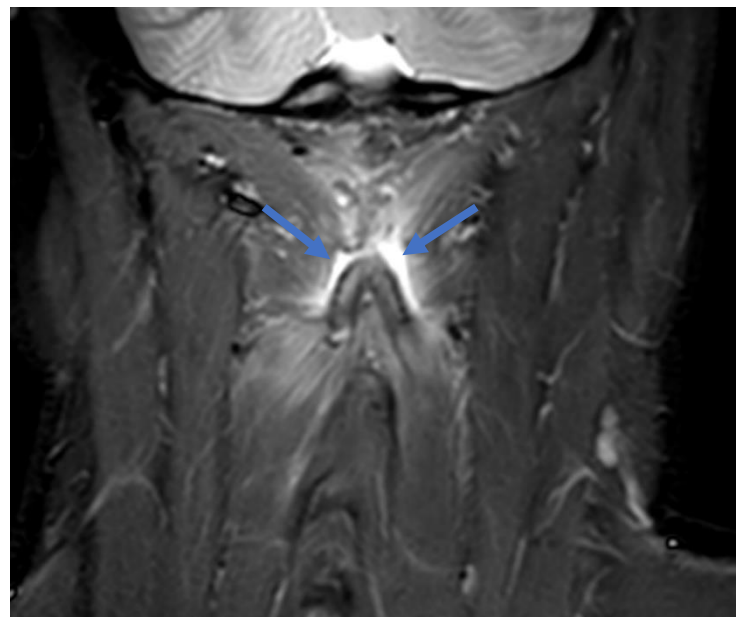
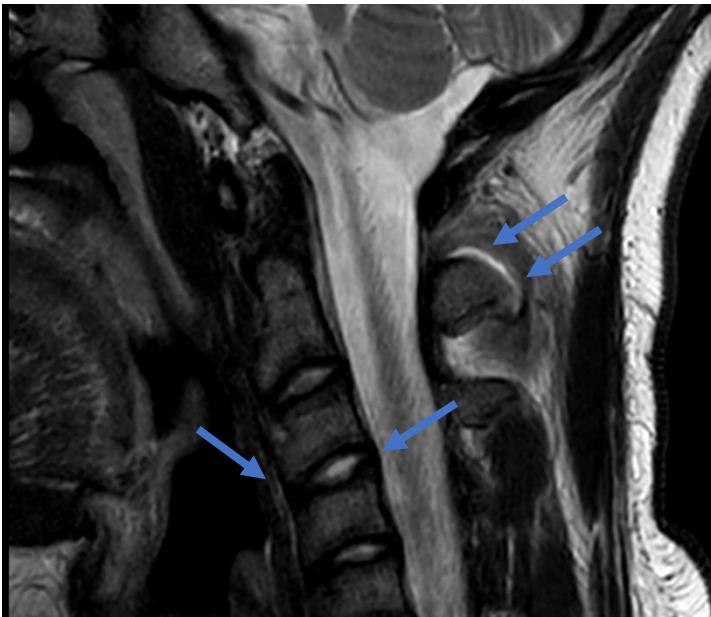


14 y.o. M rugby player, presents with significant cervical flexion injury secondary to rugby impact

MRI Findings:

- Periosteal stripping along the C2 spinous process
- Associated avulsion of the attachments of the rectus capitis posterior major, obliquus capitis and erector spinae musculature
- Well-defined fluid cleft between the spinous process of C2 and the muscular attachments
- Intact anterior/posterior longitudinal ligaments, interspinous ligaments, cervical cord

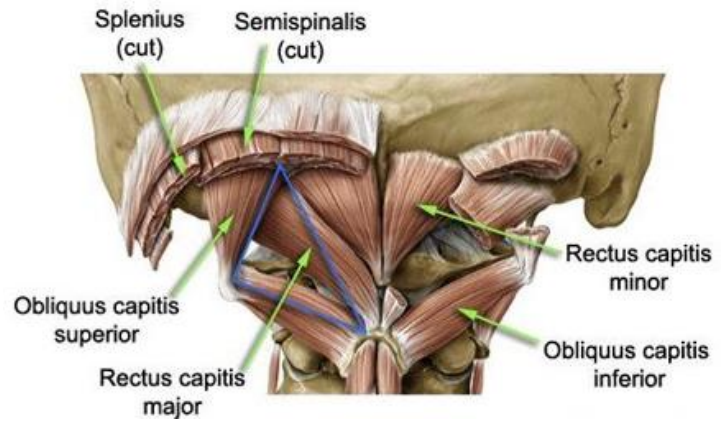
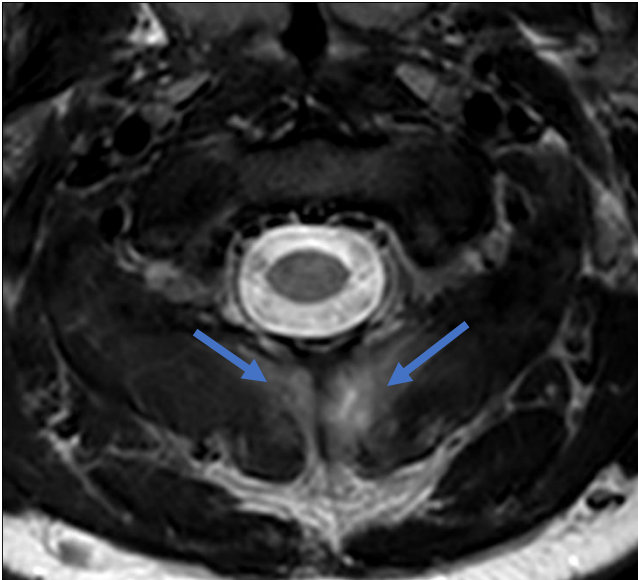


The **TOP LEFT** image shows periosteal stripping from the C2 spinous process. Note especially the integrity of the ALL and PLL anteriorly – a key finding in cases of cervical ligamentous injury. More sagittal slices show that the interspinous ligaments remain preserved.

The **TOP RIGHT** shows the periosteal avulsion in the coronal plane. Oedema and fluid track through the muscle fibres around the avulsion injury.

The **LEFT** image shows avulsion of the obliquus capitis inferior muscle. Note the cord has normal signal within the central canal.

Overleaf is another axial representation of a slightly more cranial slice, and anatomical correlation for this commonly-overlooked area of soft tissue musculature...



Left is an axial T2 through the region of muscle avulsion at the osseous attachments – note that this slice nicely shows bilateral periosteal stripping at the obliquus capitis inferior and rectus capitis muscle insertions.

The **above right** and **below** diagrams have been taken from premier anatomy websites to serve as a guide to interpretation.

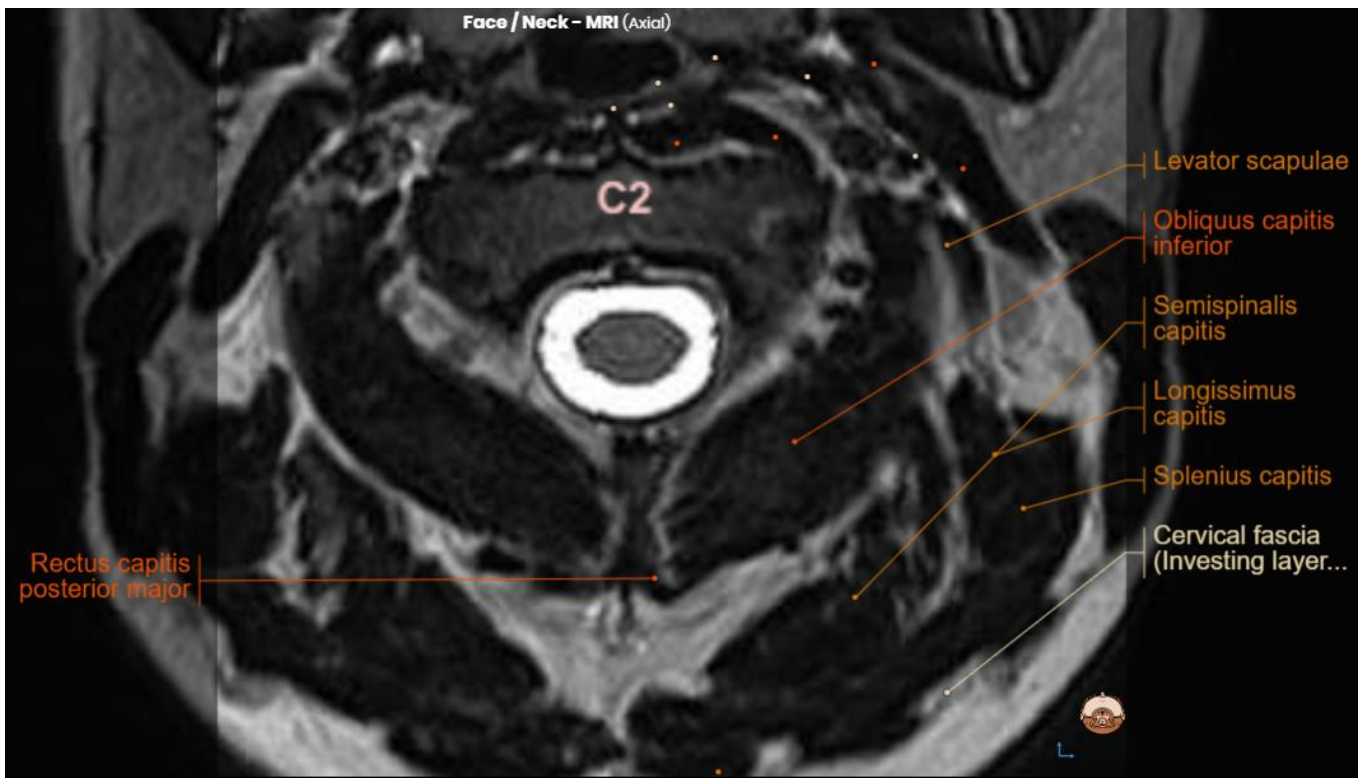


Image reference top right: Illustration taken from Duke University learning lab, https://web.duke.edu/anatomy/Lab01/Lab2_new2014.html, Acc 07/08/19

Image reference above: Axial MRI anatomy from premier electronic anatomy package IMAIOS, *ENT anatomy: MRI of the face and neck*, Ax slice 76/418, <https://www.imaios.com/en/e-Anatomy/Head-and-Neck/Face-and-neck-MRI>, Acc 07/08/2019

Discussion:

- MRI offers the best delineation of soft tissue injuries in cases of acute cervical trauma
- The key structures of interest on MRI (after acute CT to exclude osseous trauma) are the anterior/posterior longitudinal and interspinous ligaments, and to exclude cord injury or epidural haematoma
- Our case is strange in that the ligaments have held together
 - Instead, the muscles of the sub-occipital triangle have avulsed from the C2 spinous process
 - Note that this is a (late) paediatric patient
 - Also note that Our case has no bone fracture, cord oedema, or ALL/PLL injury. Very strange!