Indications for C spine surgery

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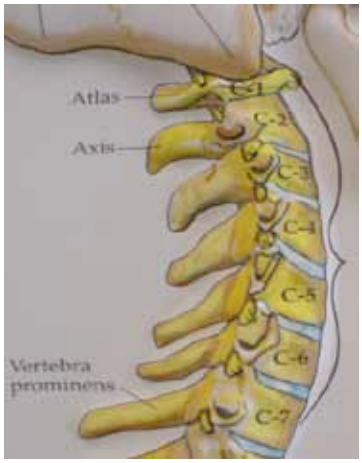
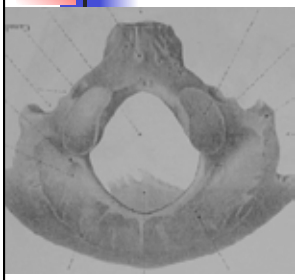
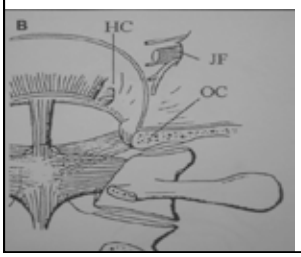
Surgery in *degenerative* or *inflammatory* C spine

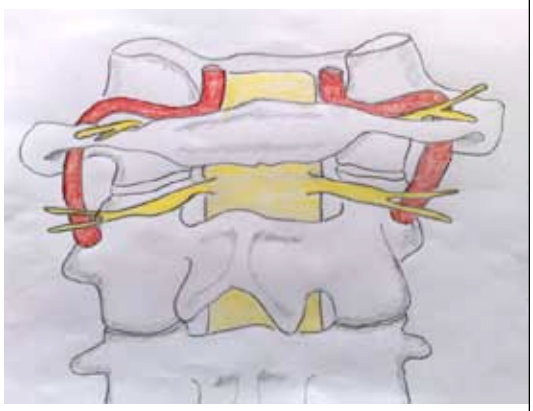
- Part 1: CCJ
- Part 2: Subaxial spine



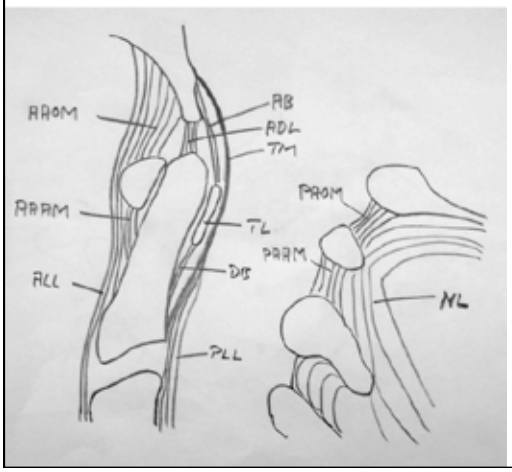
CCJ: Anatomy

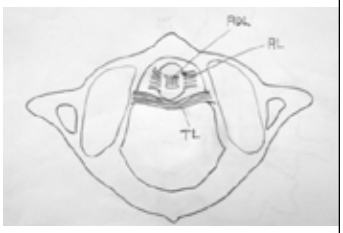


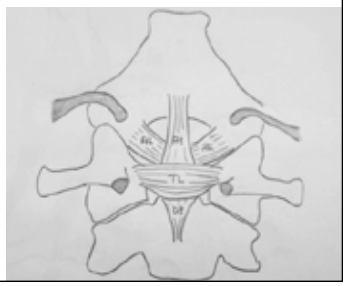




CCJ: Anatomy







CCJ: ROM

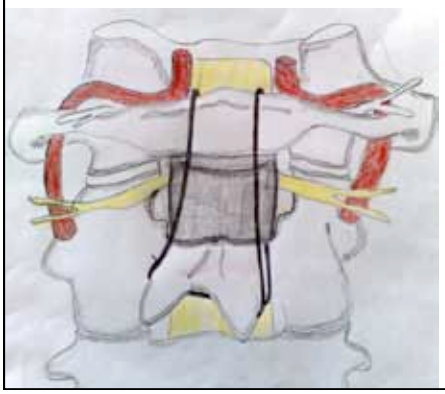
- ROM at C0-C1
  - Flexion/extension: 30°
  - Lateral bending: 5° to each side
  - Rotation: 5° to each side
- ROM at C1-C2
  - Rotation: 45° to each side
  - Flexion/extention: 20°
  - Lateral bending: 5° to each side
  - Anterior translation of C1 limited to 3mm by TL and to 4-5mm by ALs

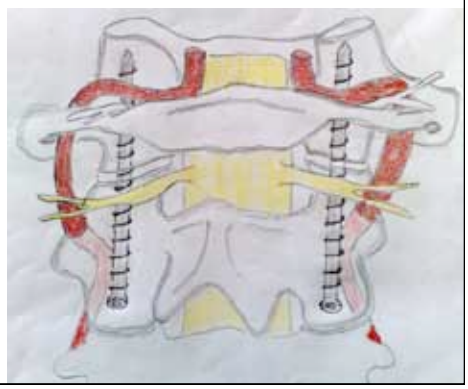
CCJ: Potential indications for surgery

- C1-C2 instability
  - RA
  - Idiopathic
- Painful C1-C2 osteoarthritis
- C0-C2 instability = Cranial settling
  - RA

Posterior C1-C2 fixation

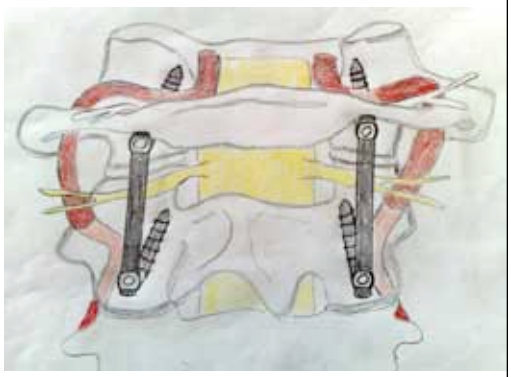
Traditional techniques





Posterior C1-C2 fixation

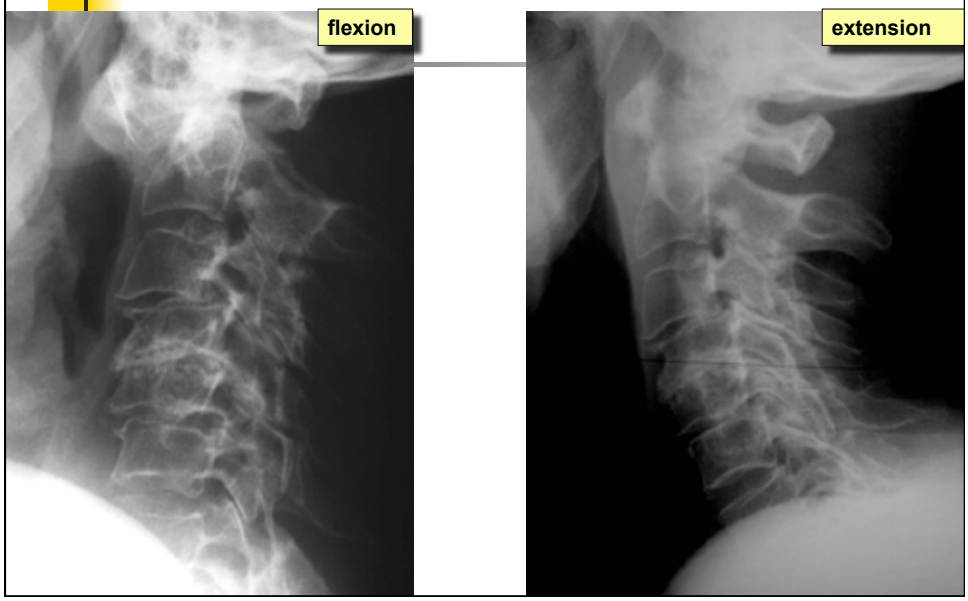
- More recent technique
  - Polyaxial lateral mass screws in C1
  - Polyaxial pars screws in C2
  - Top-loading rods
  - W/wo transverse connector

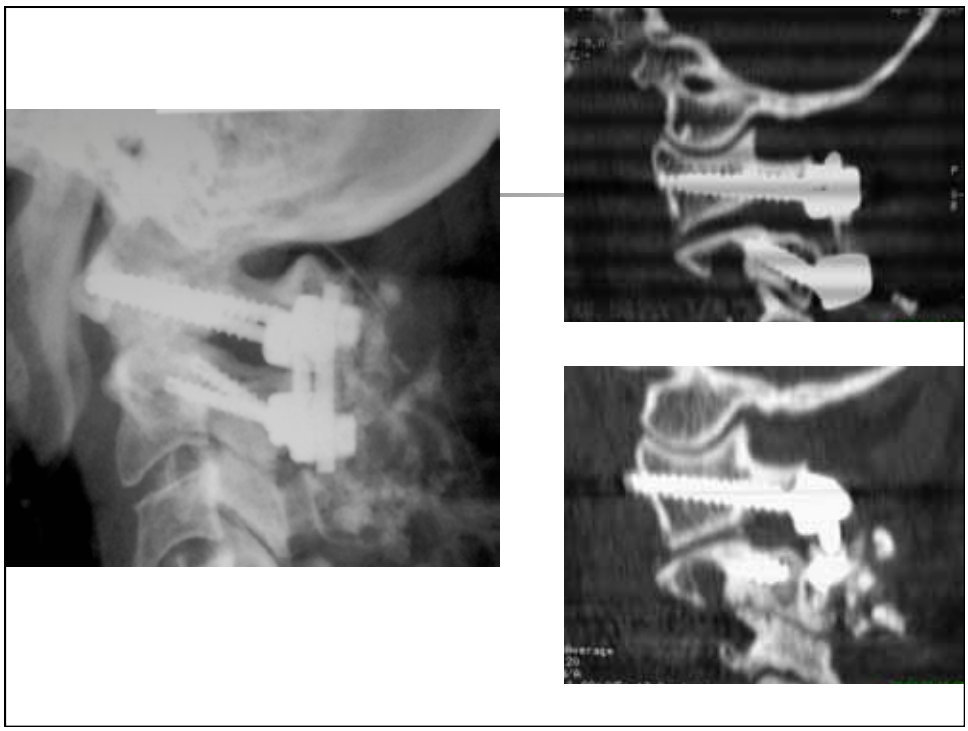


Neurosurgery. 2008; 63:ONSE100-1.
Neurosurgery. 2005; 56:E203.
Acta Neurochir (Wien). 2009;151:223-9.

C1-2 instability from RA:

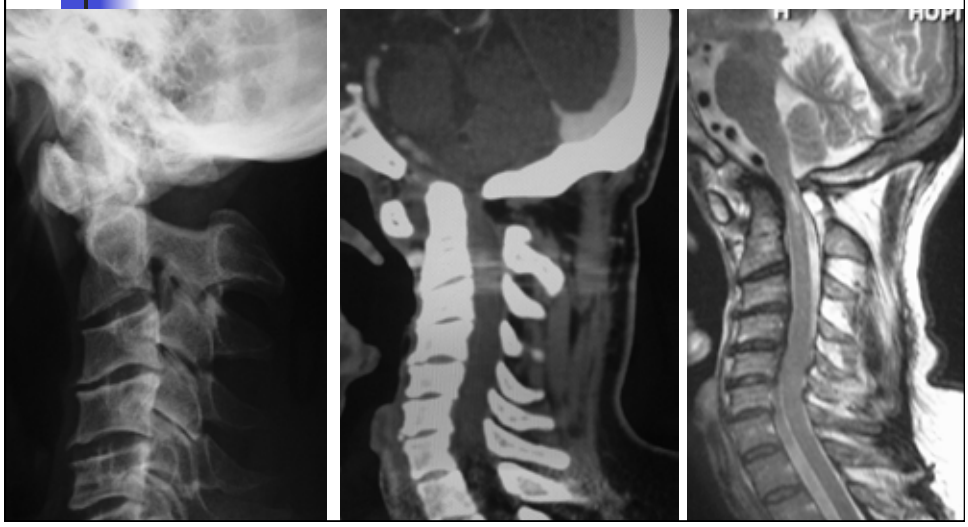
63-y-old man with upper neck pain and Ranawat 2 myelopathy





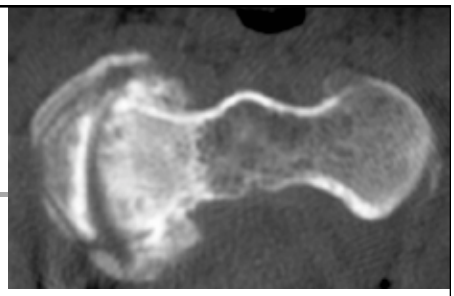
Idiopathic C1-2 instability:

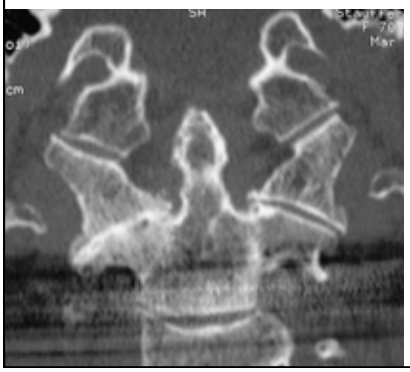
64-y-old man with severe myelopathy

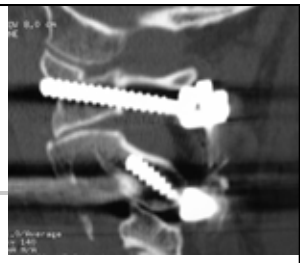


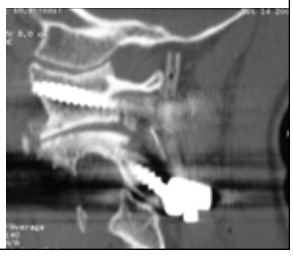
C1/2 osteoarthritis:

72-year-old woman with intractable CCJ pain on the right









Subaxial spine: anatomy

- Subaxial spinal segments have a uniform structure
- With almost 10° of rotation to each side and 10° of combined flexion/extension
- C5/6 and C6/7 are biomechanically the most loaded segments during flexion and extension

Subaxial spine: Potential indications for surgery

- Median and lateral disc herniations
- Foraminal stenoses
- Cervical canal stenosis with myelopathy

Median disc herniation:

42-y-old woman with acute tetraparesis from median C5/6 disc herniation

Median disc herniation:

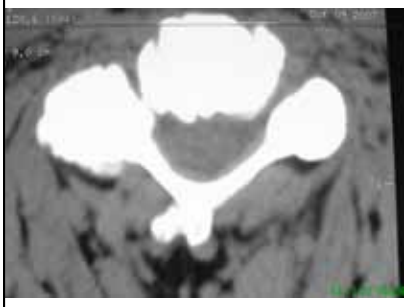
72y-old woman, acute complete tetraplegia after standing up from toilet

(Medio-) Lateral disc herniation:

35-y-old man with persistent C6 radiculopathy

Foraminal stenosis:

67-y-old man with C5 radiculopathy



Cervical canal stenosis:

57y old man, spastic tetraparesis after fall from chair

Conclusions

- Potential indications for C spine surgery
  - C1-C2 instability
    - RA, idiopathic
  - Painful C1-C2 osteoarthritis
  - Median and lateral disc herniations
  - Foraminal stenoses
  - Cervical canal stenosis with myelopathy

Thanks for your attention!