Indications for C spine surgery

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Surgery in degenerative or inflammatory C spine

- Part 1: CCJ
- Part 2: Subaxial spine
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/extension: 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

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

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!