Advantages of Image Guidance in Complex Spinal Surgery

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Cone beam Computed Tomography (cbCT)

Occipitocervical Placement of Reference Arc in Posterior Occipitocervical cases

Posterior Occipitocervical and Cervical Setup

Disclosures
- Synthes Spine-Consultant
- Globus-Royalties
Image-guided Placement of Occipitocervical Instrumentation Using a Reference Arc Attached to the Headholder

- To minimize intersegmental movement in upper cervical spine
  - Scan with retractors in place
  - Drill all holes prior to tapping and placing screws
  - Hold respirations during spin
  - Avoid trendelenberg movement

Occipitocervical

Posterior Cervical

Posterior Cervical

Posterior Cervical

Posterior Cervical

Posterior Cervical
Thoracic Transverse Pedicle Screws

- Thoracic pedicles more elongated in the sagittal plane
- Sagittal pedicle angle in thoracic spine more accommodating
- Thoracic disc spaces more narrow
- 40 screws placed, 1 Grade 1 medial breach
Other Useful Applications
Revision and Deformity

Lumbar
Transfascial Pedicle Screws

Redirecting Pedicle Screws

*35 screws redirected in 20 patients.
*28/35 screws into or against nerve roots (5 pts symptomatic; unaware of screw)
*All screws redirected successfully without breach (radiologist grading)

SI Joint Fusion

SI Joint Fusion
Another SI joint fusion

Radiation Exposure

Surgeon radiation exposure in cone beam computed tomography-based, image-guided spinal surgery

Thank You