Radiographic Assessment in Cervical Deformity

I. Radiographic Assessment of Cervical Alignment
   a. What is normal alignment of the cervical spine?
   b. Cervical alignment in the setting of subjacent spinal pelvic alignment
   c. Importance of assessing cervical alignment on standing 3 foot scoliosis films
      i. AP and lateral
      ii. UT scoliosis
      iii. Shoulder balance for coronal deformities
II. Why does cervical sagittal mal-alignment cause pain?
   a. Cantilever forces at cervical thoracic junction
   b. Why would cervical sagittal mal-alignment contribute to myelopathy

III. Plain radiographic parameters important in the assessment of cervical alignment
   a. C2-C7 cSVA
b. C1-2 lordosis (PT of cervical spine)
c. T1 slope (a moving target PI for the c spine)
d. Cervical Lordosis

e. T1 slope – CL <20
f. Upper thoracic kyphosis T1-T4
g. PI-LL, SVA, PT
h. ROM on flexion and extension films
i. Traction Films
IV. Realignment planning
a. Towards a radiographic clinical impact classification for cervical deformity
b. Realignment targets

V. Metal Selection

Titanium Rod Deformation

<table>
<thead>
<tr>
<th>Rod Angle (with respect to ground)</th>
<th>Load (lbs)</th>
<th>Rod Deformation (degrees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>90</td>
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<tr>
<td>45</td>
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<td>15</td>
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</tbody>
</table>
VI. Techniques

Semi-rigid

- Able to be mobilized with posterior facet osteotomies
- All posterior approaches reduce but do not eliminate dysphagia in these pts
- May apply corrective force with:
  - Mayfield
  - Caillieve (CoCr)
  - In-situ bending (CoCr)

540 Osteotomy

C7 PSO

Decancellation

A. Current widens and corrects tapped holes
B. Remaining bone fragment
C. Lateral walls

Decancellation

A. C3
B. C7
C. Remaining bone fragment resisted
References


The FDA has not cleared the following pharmaceuticals and / or medical devices for the use described in this presentation. Lateral Mass Screws