**Supplementary Table 1**. Summary of co-morbidities collected as part of the initial prospective AO North America prospective cervical spondylotic myelopathy study.

**Co-morbidity**

**Cardiovascular System**

Myocardial infarction

Angina/coronary artery disease

Congestive heart failure

Cardiac arrhythmias

Hypertension

Venous disease

Peripheral arterial disease

**Respiratory System**

 Restrictive lung disease

Chronic obstructive pulmonary disease

 Chronic supplemental oxygen

**Gastrointestinal System**

 Chronic liver disease manifested on biopsy or by persistently

elevated bilirubin

Hepatitis or cirrhosis without portal hypertension

Hepatitis or cirrhosis with compensated portal hypertension

Hepatitis or cirrhosis with uncompensated portal hypertension

Recent ulcers treated with medication

Recent ulcers requiring transfusion and/or surgical treatment

Chronic pancreatitis without complications

Uncomplicated acute pancreatitis or chronic pancreatitis with

mild complications

 Acute or chromic pancreatitis with major complications

**Renal System**

 Chronic renal insufficiency, not requiring dialysis

 Chronic renal insufficiency, requiring chronic dialysis

 Acute/chronic renal insufficiency with multi-organ failure, shock, sepsis, or

 requirement for acute dialysis

**Endocrine System**

 Adult onset diabetes mellitus controlled by oral agents only

 Poorly controlled adult onset diabetes mellitus

 Insulin dependent diabetes mellitus

 Diabetes causing end organ failure or requiring hospitalization for diabetic

 ketoacidosis within the past 6 months

**Psychiatric**

 Major depression or bipolar disorder controlled with medication

 Uncontrolled major depression or bipolar disorder

Schizophrenia controlled with medications

Active schizophrenia

Recent suicide attempts

**Rheumatologic**

 Connective tissue disorder on NSAIDS or no treatment

 Connective tissue disorder on steroids or immunosuppressant medications

 Connective tissue disorder with secondary end-organ failure

**Neurological System**

 Multiple sclerosis, Parkinson’s, myasthenia gravis, or other chronic

 neuromuscular disorder, but ambulatory and providing most of

self care

Multiple sclerosis, Parkinson’s, myasthenia gravis, or other chronic

 neuromuscular disorder, but able to do some self care

Multiple sclerosis, Parkinson’s, myasthenia gravis, or other chronic

 neuromuscular disorder and requiring full support for activities of

 daily living

**Supplementary Table 2**. Correlations between Neck Disability Index (NDI) scores and sagittal radiographic parameters.

|  |  |  |
| --- | --- | --- |
|  | Pearson Correlation | p-value |
| C2 Tilt  | 0.056 | 0.344 |
| SVA C1  | 0.016 | 0.454 |
| SVA C2  | 0.002 | 0.493 |
| SVA Center of Gravity | 0.061 | 0.330 |
| T1 Slope  | -0.042 | 0.381 |
| C2 slope  | 0.162 | 0.121 |
| C7 slope  | -0.055 | 0.345 |
| Cobb C2-C7  | -0.186 | 0.090 |
| Harrison C2-C7  | -0.105 | 0.224 |
| T1 slope - Cobb  | 0.186 | 0.089 |
| T1 slope - Harrison C2-C7  | 0.083 | 0.276 |
| Posterior length  | -0.226 | 0.050 |
| Anterior length  | **-0.274\*** | **0.022** |

\*denotes a p-value <0.05

**Supplementary Table 3**. Summary of correlations among the radiographic parameters assessed.\*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | C1-C7 SVA | C2-C7 SVA | Center of gravity-C7 SVA | Posteriorlength | Anterior length | C2-C7 Cobb angle | C2-C7 Harrison angle | T1 slope minus C2-C7 Cobb angle | T1 slope minus C2-C7 Harrison angle |
| C1-C7 SVA | Pearson | 1.000 | **.994** | **.954** | **.240** | .200 | .002 | .027 | **.639** | **.528** |
| p-value |   | **<.001** | **<.001** | **.037** | .069 | .494 | .421 | **<.001** | **<.001** |
| C2-C7 SVA | Pearson | **.994** | 1.000 | **.936** | **.251** | **.231** | .070 | .107 | **.568** | **.447** |
| p-value | **.000** |   | **<.001** | **.031** | **.043** | .305 | .216 | **<.001** | **<.001** |
| Center of gravity-C7 SVA | Pearson | **.954** | **.936** | 1.000 | .214 | .160 | -.055 | -.048 | **.663** | **.573** |
| p-value | **<.001** | **<.001** |   | .056 | .119 | .343 | .363 | **<.001** | **<.001** |
| Posterior length | Pearson | **.240** | **.251** | .214 | 1.000 | **.932** | -.034 | .004 | .077 | .026 |
| p-value | **.037** | **.031** | .056 |   | **<.001** | .402 | .487 | .285 | .425 |
| Anterior length | Pearson | .200 | **.231** | .160 | **.932** | 1.000 | **.316** | **.310** | -.114 | -.114 |
| p-value | .069 | **.043** | .119 | **<.001** |   | **.009** | **.010** | .202 | .201 |
| C2-C7 Cobb angle | Pearson | .002 | .070 | -.055 | -.034 | **.316** | 1.000 | **.918** | **-.579** | **-.482** |
| p-value | .494 | .305 | .343 | .402 | **.009** |   | **<.001** | **<.001** | **<.001** |
| C2-C7 Harrison angle | Pearson | .027 | .107 | -.048 | .004 | **.310** | **.918** | 1.000 | **-.560** | **-.647** |
| p-value | .421 | .216 | .363 | .487 | **.010** | **<.001** |   | **<.001** | **<.001** |
| T1 slope minus C2-C7 Cobb angle | Pearson | **.639** | **.568** | **.663** | .077 | -.114 | **-.579** | **-.560** | 1.000 | **.891** |
| p-value | **<.001** | **<.001** | **<.001** | .285 | .202 | **<.001** | **<.001** |   | **<.0001** |
| T1 slope minus C2-C7 Harrison angle | Pearson | **.528** | **.447** | **.573** | .026 | -.114 | **-.482** | **-.647** | **.891** | 1.000 |
| p-value | **<.001** | **<.001** | **<.001** | .425 | .201 | **<.001** | **<.001** | **<.001** |   |

\*Light-gray boxes indicate Significant p-values (p<0.05). Significant correlations and corresponding p-values are shown in bold-face type.

**Supplementary Table 4**. Summary of correlations among the magnetic resonance imaging parameters assessed.\*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Cord length | Cord volume | Cord surface area | Cord mean area |
| Cord length | Pearson  | 1.000 | **.472** | **.685** | .206 |
| p-value |   | **<.001** | **<.001** | .063 |
| N | 56 | 56 | 56 | 56 |
| Cord volume | Pearson  | **.472** | 1.000 | **.916** | **.957** |
| p-value | **<.001** |   | **<.001** | **<.001** |
| N | 56 | 56 | 56 | 56 |
| Cord surface area | Pearson  | **.685** | **.916** | 1.000 | **.802** |
| p-value | **<.001** | **<.001** |   | **<.001** |
| N | 56 | 56 | 56 | 56 |
| Cord mean area | Pearson  | .206 | **.957** | **.802** | 1.000 |
| p-value | .063 | **<.001** | **<.001** |   |
| N | 56 | 56 | 56 | 56 |

\*Light-gray boxes indicate Significant p-values (p<0.05). Significant correlations and corresponding p-values are shown in bold-face type

**Supplementary Table 5**. Correlations between normalized MRI parameters and measures of health-related quality of life for the combined lordotic and kyphotic group. 1

|  |  |  |
| --- | --- | --- |
|  | mJOA | NDI |
|  | r | p-value | r | p-value |
| N\_Length | .199 | .142 | -.008 | .952 |
| N\_VOL | .088 | .519 | .075 | .591 |
| N\_AreaEXT | .136 | .317 | .001 | .996 |
| N\_Mean Area | .057 | .678 | .106 | .447 |
| N\_Min Area | -.011 | .938 | .120 | .386 |
| N\_Max Area | .081 | .555 | .108 | .436 |
| Global\_Area\_range\_divC7 | .190 | .160 | .024 | .862 |

1mJOA = modified Japanese Orthopedic Association; N = normalized; VOL = volume; AreaEXT = external surface area; global\_Area\_range\_divC7 denotes the range between minimum and maximum area divided by C7

\*denotes a p-value <0.05, \*\* denotes a p-value <0.01)