

Combined Vertebral Translations

The combined translations on the AOMSI report are made available, **only** if the following criteria are met:

- The two images are inserted in the same section of the report
- Both images are the C-Spine Lateral x-rays
- One of the images is a Flexion view, the other is an Extension view
- Both images include a C-Spine lateral annotation with translation lines or with angulations lines

The Combined Vertebral Translation table is made up of five columns:

- The vertebra number
- The translation measured on the Flexion view
- The translation measured on the Extension view
- The total translation from both views
- The result rating for the vertebra, Normal, Abnormal or Ratable

The AOMSI is evaluated according to the AMA Guides, 5th Edition.

Rating Result Column

(Also reference the Legend below the Translation table.)

Result	Description
Ratable	The vertebra number, the total translation and the result rating are written in red when the vertebra is ratable, i.e. when its total translation is greater than 3.5 mm
Abnormal	The vertebra number, the total translation and the resulting rating are written in gold when the vertebra is abnormal, i.e. when its total translation is greater than 1.0 mm but lesser than or equal to 3.5 mm.
Abnormal	The vertebra number, the total translation and the result rating are written in gold when the vertebra is abnormal, i.e. when its total translation is negative and greater than 1.0 mm in absolute value.

Normal	The vertebra number, the total translation and the result rating are written in black when the vertebra is normal, i.e. when its total translation is ranging between -1.0 mm and 1.0 mm.
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Here is an example of this:

Radiology Exam - Cervical Spine Flexion/Extension Study

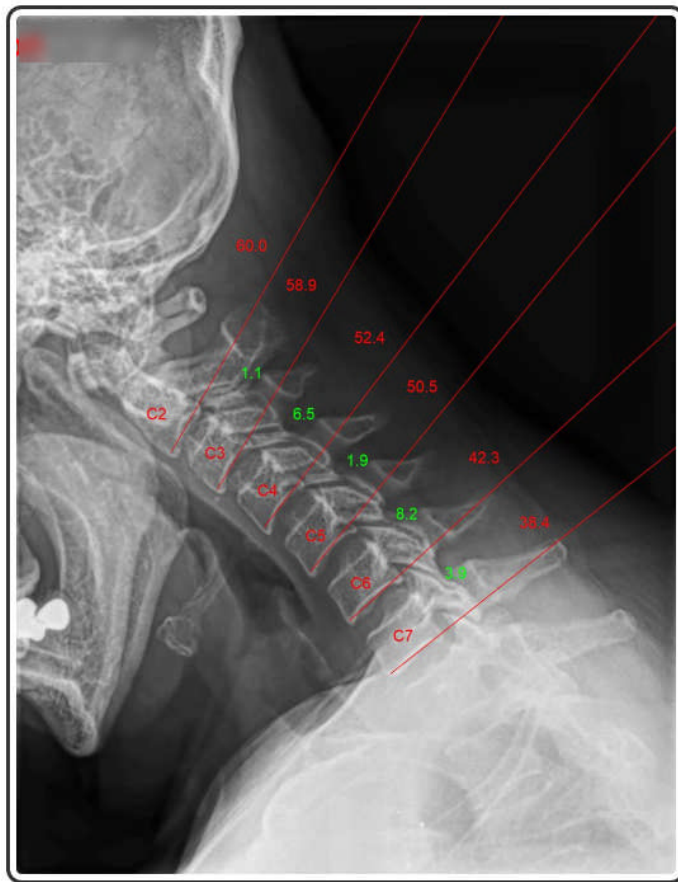
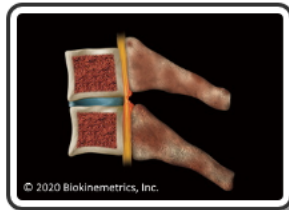


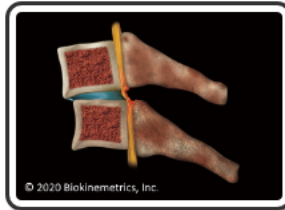
Image 1A: 2019-02-07

Posterior Longitudinal Ligament

The compromised integrity of the posterior longitudinal ligament (PLL) is demonstrated on the images below by an anterior shift (forward translational motion) of one vertebra over the vertebra below. Translational deviation can also occur by the posterior widening of the intervertebral disc space resulting in an increased disc angle or angular motion. By measuring these deviations of George's Line (as defined in Yochum & Rowe, p. 149), Alteration of Motion Segment Integrity (AOMSI) can be quantified and identified with the AMA Guides To The Evaluation of Permanent Impairment. (5th edition, p. 378-379; and 6th edition, p. 563-566).



Widening of the Posterior Disc



Anterolisthesis



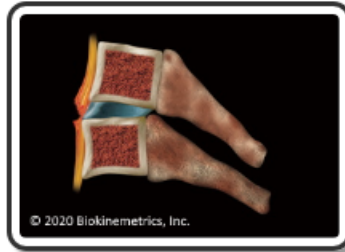
Image 1B: 2019-02-07

Anterior Longitudinal Ligament

The compromised integrity of the anterior longitudinal ligament (ALL) is demonstrated on the images below by a posterior shift (backwards translational motion) of one vertebra over the vertebra below. Translational deviation can also occur by the anterior widening of the intervertebral disc space resulting in an increased disc angle or angular motion. By measuring these deviations of George's Line (as defined in Yochum & Rowe, p. 149), Alteration of Motion Segment Integrity (AOMSI) can be quantified and identified with the AMA Guides To The Evaluation of Permanent Impairment. (5th edition, p. 378-379; and 6th edition, p. 563-566).



Widening of the Anterior Disc



Retrolisthesis

Image 1A - Vertebral Angulations (Cervical Flexion)

Vertebra	Angle (°)	Angulation (°)	Result
C2-3	60.0	1.1	Normal
C3-4	58.9	6.5	Normal
C4-5	52.4	1.9	Normal
C5-6	50.5	8.2	Abnormal
C6-7	42.3	3.9	Normal
C7-T1	38.4	N/A	N/A

Angular motion is measured by determining the anterior angular motion of one vertebra over another. A diagnosis of AOMSI in the cervical spine by angular loss of motion segment integrity measurements requires angular motion of more than 11 degrees greater than each adjacent level on the flexion radiograph. Angular motions between 7 and 11 degrees are abnormal but not ratable. (AMA Guides)

Image 1A - Vertebral Translations (Cervical Flexion)

Vertebra	A - Translation (mm)	B - Diameter (mm)	A/B Ratio (%)	Result
C3	0.3 anterior	18.5	1.6	Normal
C4	0.9 posterior	18.7	4.8	Normal
C5	0.6 anterior	18.4	3.3	Normal
C6	0.5 posterior	20.6	2.4	Normal
C7	0.1 posterior	21.6	0.5	Normal

Translational motion is measured by determining the anteroposterior motion of one vertebra over another. A diagnosis of AOMSI in the cervical spine by translational loss of motion segment integrity measurements requires greater than 20% anterior OR greater than 20% posterior relative translation of one vertebra on another, on flexion OR extension radiographs, respectively. (AMA Guides 6th Ed.)

Combined Vertebral Translations

Vertebra	Flexion (mm)	Extension (mm)	Total (mm)	Result
C3	0.3	4.1	4.4	Ratable
C4	-0.9	3.5	2.6	Abnormal
C5	0.6	2.5	3.1	Abnormal
C6	-0.5	2.1	1.6	Abnormal
C7	-0.1	0.5	0.4	Normal

Translational motion is measured by determining the anteroposterior motion of one vertebra over another. A diagnosis of AOMSI in the cervical spine by translational loss of motion segment integrity measurements requires greater than 3.5 mm cumulative translation of one vertebra on another, when combining the results from one flexion radiograph and one extension radiograph. Cumulative translations between 1.0 and 3.5 mm are abnormal but not ratable, as well as negative translations greater in magnitude than -1.0 mm. (AMA Guides 5th Ed.)

**Image 1B - Vertebral Angulations
(Cervical Extension)**

Vertebra	Angle (°)	Angulation (°)
C2-3	12.8	-6.5
C3-4	6.3	-3.5
C4-5	2.8	-8.2
C5-6	-5.4	-7.4
C6-7	-12.8	-14.3
C7-T1	-27.1	N/A

Angular motion segment integrity on the cervical extension view is not considered as part of the cervical spine AOMSI determination although it can have relevant clinical considerations and is measured here for clinical observation. (AMA Guides)

Image 1B - Vertebral Translations (Cervical Extension)

Vertebra	A - Translation (mm)	B - Diameter (mm)	A/B Ratio (%)	Result
C3	4.1 posterior	18.8	21.8	Ratable
C4	3.5 posterior	19.1	18.3	Normal
C5	2.5 posterior	19.1	13.1	Normal
C6	2.1 posterior	20.6	10.2	Normal
C7	0.5 posterior	21.8	2.3	Normal

Translational motion is measured by determining the anteroposterior motion of one vertebra over another. A diagnosis of AOMSI in the cervical spine by translational loss of motion segment integrity measurements requires greater than 20% anterior OR greater than 20% posterior relative translation of one vertebra on another, on flexion OR extension radiographs, respectively. (AMA Guides 6th Ed.)

FINDINGS AND IMPRESSIONS

Cervical Spine Lateral Flexion:

- The angle of curvature between the C2 and C7 vertebrae is 21.1 degrees.

Cervical Spine Lateral Extension:

- The angle of curvature between the C2 and C7 vertebrae is -37.4 degrees.