

AOMSI Radiology Report Optional –

Posterior Vertebral Body Line Analysis – George’s Line (Neutral)

The screenshot shows a software interface titled "Create a Report - Polly PI". It features two main sections of report options, each enclosed in a light gray box. The first section is labeled "Must select at least one" and contains three items: "Angulation Analysis (Flexion - 5th or 6th Editions)", "Relative Translation (Flexion/Extension - 5th or 6th Editions)", and "Linear Translation (Flexion/Extension - 5th Edition only)". The second section is labeled "Optional" and contains six items: "Measurement Graphs", "Posterior Vertebral Body Line Analysis - George's Line (Neutral)", "ALL and PLL Diagrams and Explanations", "Total Linear and Relative Translation (Flexion/Extension)", "Relative Translation (Neutral)", "Linear Translation (Neutral)", and "Images with Dot Placement". The "Posterior Vertebral Body Line Analysis - George's Line (Neutral)" option is selected, indicated by a blue checkmark and a green rectangular highlight. At the bottom of the interface, there are three buttons: "< Back", "Exit", and "Next >".

Create a Report - Polly PI

Must select at least one

- Angulation Analysis (Flexion - 5th or 6th Editions)
- Relative Translation (Flexion/Extension - 5th or 6th Editions)
- Linear Translation (Flexion/Extension - 5th Edition only)

Optional

- Measurement Graphs
- Posterior Vertebral Body Line Analysis - George's Line (Neutral)
- ALL and PLL Diagrams and Explanations
- Total Linear and Relative Translation (Flexion/Extension)
- Relative Translation (Neutral)
- Linear Translation (Neutral)
- Images with Dot Placement

< Back Exit Next >

Option will be active when the exam contains the neutral view and has the Advanced Line Analysis' George's Line drawn on it.

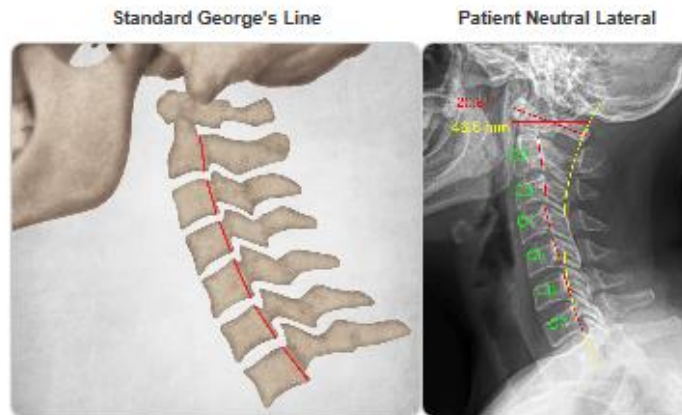
The George's Line Calculation Method will always appear as Figure D on the report, even if you don't select all prior Figures (Angulation Analysis, Relative and Linear Translation).

Cervical Spine Posterior Vertebral Body Line Analysis

Clinical Relevance of Measurements & Analysis

The Cervical Spine Posterior Vertebral Body Line is also known as George's Line. The line is used to determine if a vertebral displacement occurs in the smooth continuous curve from C2 thru C7. Alteration or malalignment of this line can indicate ligamentous injury or other disruptions of the cervical spine at the affected motion segment. It is the disruption of this line which has traditionally prompted radiologists to infer some kind of instability due to ligamentous laxity, fracture, dislocation, or degenerative joint disease.¹⁶

A series of short lines are drawn on the posterior aspect of the vertebral bodies on the neutral lateral cervical view from C2 to C7. The posterior body surfaces can be connected with this line, which traverses across the intervertebral disc, the key landmarks being the superior and inferior posterior body corners. The measurements from the patient's cervical neutral lateral radiograph were obtained in accordance with the methodologies described in the scientific literature.^{16,18,19} A deviation or interruption of the standard smooth curved line may indicate trauma, facet joint injury, a retrolisthesis or anterolisthesis from ligament or bone damage. The line deviation or "offset" between each vertebral motion segment is measured. The patient's offset measurements from each motion segment are displayed in the table below.



George's Line Measurements

Motion Segment	Offset (mm)
C2-C3	0.8
C3-C4	2.9
C4-C5	0.1
C5-C6	1.6
C6-C7	1.1

The offset for a motion segment is determined as a measurement (mm) from one posterior line of the superior vertebral body compared to the posterior body line of the vertebra below using the scientific methodologies described in the Measurement Method below. The patient's offset measurements from the lateral view are displayed in the table above. The larger the offset measurement (mm), then a more significant ligament injury is suspected. Zero mm is considered the normal standard. Any measurement greater than zero is considered a deviation from the standard. Measurements greater than 1.1mm are indicative for evidence of ligamentous laxity, injury, or other abnormalities.^{2-12,18-19}

Figure D: George's Line Calculation Method



A dot is placed at the posterior superior endplate corner and a second dot at the posterior inferior endplate corner on the same vertebral body. These dots are connected forming a straight posterior body line. The mid-point of that posterior body line is determined, and a perpendicular line is extended off this mid-point. The perpendicular lines drawn from the superior and inferior vertebral body mid-points on the motion segment will intersect posteriorly from the motion segment. A new line (bisector line) is drawn from the intersection of the perpendiculars to the mid-point between the inferior posterior dot of the upper vertebrae, and the superior posterior dot on the lower vertebrae. This bisector dotted line as shown on Figure D, is the line used for measuring offset measurement, between the points of where the intersection of the posterior body lines extend into the disc space. The distance to determine the offset for a motion segment is obtained by measuring the distance (D).¹⁶