

# Spinographic Interpretation

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## A. Spinographic Interpretation

### a. Lateral

- i. Overall Curvature
  1. Kyphotic
  2. Lordotic
- ii. AS or AI Atlas
- iii. Posteriority of C2
- iv. Level of hard palate
- v. "S" Line construction
  1. Mark the center of anterior tubercle and center of posterior arch
  2. Connect these two lines
- vi. Stress Vertebra Line
  1. Extend a line along the posterior body of C2
  2. Extend a line along the posterior body of C7 or lowest visible cervical
  3. The point where the two lines cross is the stress vertebra
- vii. Look for congenital variants
  1. Agenesis of the Anterior or Posterior Arch
  2. Ponticulus Posticus
  3. Cervical Rib
- viii. Wear and Tear
  1. Arthrosis
  2. DJD

### b. Nasium

- i. Mark inferior attachment of posterior arch to right and left lateral masses
- ii. Mark superior attachment of posterior arch to right and left lateral masses
- iii. Mark inferior lateral tips of inferior articular surface of atlas bilaterally
- iv. Mark the outer 1/3 of the occipital condyle bilaterally
- v. Mark the C2 superior articulating facet as it meets the body of C2
- vi. Mark the C2 superior articulating facet as it meets the odontoid process
- vii. Mark the junction of C2 lamina
- viii. Mark the center of the C2 body – usually the center of the base of the odontoid

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1. \*If odontoid is malformed, scribe an arc equidistant from the lateral margin of C2 body toward midline bilaterally. This will provide the center of the body
  - ix. Mark the junction of lamina of C7 or lowest visible cervical vertebra
  - x. Mark the center of the C7 or lowest visible cervical vertebral body
  - xi. Connect the inferior attachments of the posterior arch to the lateral masses (Atlas Plane Line – APL)
  - xii. Find the center of the skull using a skull dividing template – extend this line from the APL to the top of the film (central skull line)
  - xiii. Measure the acute angle formed between the central skull line and the APL
    1. This is side of atlas laterality
  - xiv. Measure at the top of film and central skull line to note head tilt
  - xv. Compose a line from the APL toward the bottom of the film. The line should pass between the C2 junction of lamina and the center of the C2 body and between the C7 junction of lamina and C7 body (lower spine angle)
  - xvi. Measure the acute angle made between the APL and the lower spine angle
  - xvii. Place a protractor at the lateral edge of the film opposite to the side of atlas laterality and measure the number of degrees the APL is above or below the level line (90° mark on the protractor)
  - xviii. On the side of laterality, construct a line along the slope of the condyle and one along the slope of the C2 superior articulating surface.
  - xix. Measure the angle formed between the APL and the condylar line and the axial line.
  - xx. Subtract the two measurements and divide by two (2). This is the PZ.
- c. APOM
- i. Mark the most inferior tips of the Occipital Condyles.
    1. Bisect the foramen magnum by scribing equidistant arcs from both inferior tips to draw a line through the crossing arcs above and below the foramen magnum (central skull line)

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2. Connect the two inferior tips of the Occipital Condyles.
  3. Place the compass point on the cross between the condyle line and the central skull line.
  4. Extend the compass so it approximates the right condyle tip.
  5. Draw a circle around the center point
- ii. Mark the junction of lamina of C2
  - iii. Mark the center of the C2 body
- d. Base Posterior
- i. Mark the center of transverse foramen bilaterally
  - ii. Mark the Duff Points
  - iii. Mark the internal occipital protuberance (IOP)
  - iv. Mark the center of the nasal spine
  - v. Mark Like points on the Basilar Process
  - vi. Create a Central Skull line (using one or more of the following methods)
  - vii. Scribing arcs with the Duff points
  - viii. Scribing arcs with the basilar process points
  - ix. Connect the IOP and Nasal spine
  - x. Connect the atlas transverse foramen points (APL)
  - xi. Connect the Duff points
  - xii. Measure the angle between the APL and central skull line
  - xiii. If Duff points were used
    1. Place compass at center of cross of Duff Points and Central Skull Line
    2. Extend the compass out to the center of the right transverse foramen
    3. Make a small mark on the center of the right transverse foramen
    4. Using the same distance, place a mark in the direction of the left transverse foramen
      - a. If the line is between the central skull line and the left transverse foramen, the atlas is left
      - b. If the line is beyond the left transverse foramen, the atlas is right