

NAME OF PATIENT: Maria Gonzalez (name changed / actual patient report)
DATE OF REPORT: 5/10/2011
DATE OF EXAMINATION: 5/2/2011
REFERRING PHYSICIAN: Dr. Daniel J. Richter
TESTING FACILITY: Brooklyn Accident & Injury Center
INDICATIONS: Whiplash Injury

Digital Motion X-ray Cervical Spine

1. In the neutral lateral projection: Shows reversal of the cervical lordosis, with the apex of the reversal at the level of C5-C6. There is disc narrowing and spurring at C6-C7.

The integrity of the cervical lordosis and overall condition of the cervical spine is evaluated. The loss of the cervical lordosis may be a result of damage to the posterior longitudinal, capsular or interspinous ligaments.



Neutral lateral projection

(DMX stills throughout this document are from file footage to depict protocols and areas studied, and are not of this patient. To see this patient, review the DMX study.)

2. In the lateral nodding projection movement at the atlanto-occipital articulation: Is within normal limits. There is a tilting of C1 laterally.

This view examines the integrity of the transverse ligament which is responsible for preventing the anterior movement of C1 on C2. An increase of the Atlanto-Dens interspace (ADI) indicates damage to the transverse ligament.



Increased ADI space



Lateral nodding projection

3. Motion in the neutral lateral projection to full flexion: There is an anterolisthesis of C3 on C4.

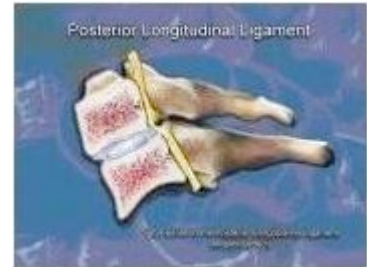
This view examines the integrity of the posterior longitudinal ligament demonstrated by a forward (anterior) movement of one vertebrae over the vertebrae below or by the posterior widening of the intervertebral disc space (increased disc angle).



Full flexion projection

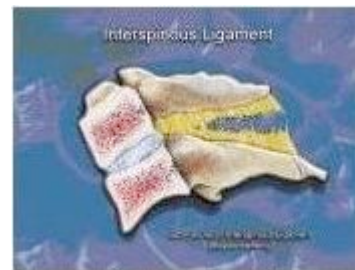


Widening of posterior disc space



Anterolisthesis

The integrity of the interspinous ligament is evaluated in the lateral flexion view. Damage to this ligament results in increased separation of the spinous processes in flexion.



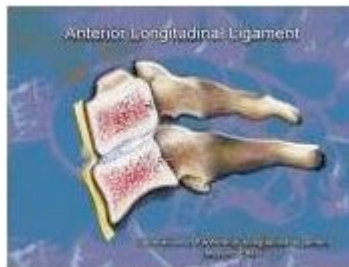
Damaged Interspinous Ligament

4. Motion in the neutral lateral projection to full extension: Is restricted.

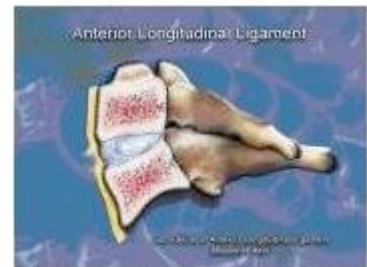
This view examines the integrity of the anterior longitudinal ligament demonstrated by a backward (posterior) movement of one vertebrae over the vertebrae below or by the anterior widening of the intervertebral disc space (increased disc angle).



Full Extension



Retrolisthesis



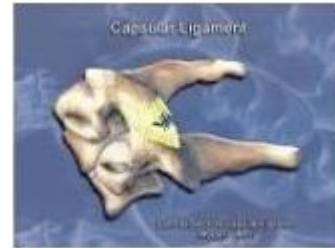
Widening of the anterior disc

5. Motion in the oblique flexion projection: There is gapping of the facet joints at C6-C7 bilaterally.

This view examines the integrity of the capsular ligaments by observing gapping of the facet joints, located on the posterior cervical spine (C2-C7), there are five capsular ligaments on the right and the left.



Right IVF flexion



Capsular ligament damage

6. Motion in the oblique extension projection: There is intervertebral foraminal encroachment of the facet joint at C3-C4 on the left.

This view examines the integrity of the capsular ligament by encroachment into the intervertebral foramen, located on the posterior cervical spine (C2-C7), there are five capsular ligaments on the right and the left.



Left IVF oblique extension

7. Motion in the A-P projection lateral bending: Is restricted bilaterally.

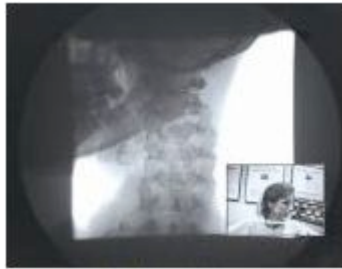
This view allows us to evaluate coupled motion of the spinous processes which examines facet joint integrity.



Left lateral bending

8. Motion in the A-P rotation projection: Is restricted bilaterally.

This view examines the rotational range of motion between Occiput-C1-C2. Increased motion indicates damage to the alar and accessory ligaments.



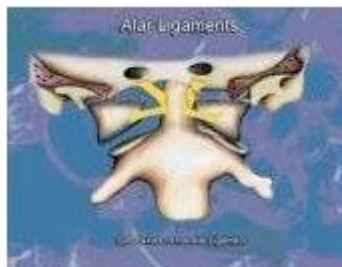
Left rotation

9. Motion in the A-P open mouth lateral bending projection: There is an abnormal lateral translation of C1 on C2 with an overhang to the right. There is a sigmoidal deviation of the mandible during closing of the mouth.

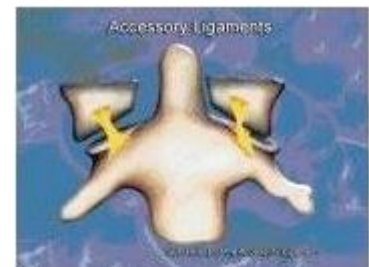
This view examines the integrity of the alar and accessory ligaments either by the lateral overhang of C1 on C2 or by the changes in the para-odontoid spaces.



Open mouth right lateral bending



C1 lateral mass overhang



Change in Para-odontoid space

IMPRESSION for patient Maria Gonzalez:

- Damage to the posterior longitudinal ligament is indicated by an anterolisthesis at C3 on C4.
- Damage to the capsular ligament is indicated by gapping of the facet joint at C6-C7 bilaterally.
- Damage to the capsular ligament is indicated by intervertebral foraminal encroachment of the facet joint at C3-C4 on the left.
- Damage to the alar and accessory ligaments is indicated by an overhang of the lateral mass of C1 to the right.

A handwritten signature in black ink that reads "John R. Postlethwaite".

John R. Postlethwaite, D.C.
Director of Radiology
Signature electronically applied
JP/lp