

UPRIGHT DYNAMIC MRI REVEALS OCCULT DISC HERNIATION

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Clinical Studies performed at: Melville MRI - Long Island • FONAR Corporation, Melville, NY

"This MRI unit is important in that it enables the medical imaging specialist to uncover significant occult disease that is not apparent on the recumbent MRI studies" :: J. Randy Jinkins, MD, FACR, FEC

Clinical Case Overview

37 year-old male with bilateral pain and tingling in hands exacerbated upon flexion of the cervical spine.

Clinical Study

The images shown below were acquired on the Fonar Stand-Up™ MRI. The sagittal image in Figure 1 was acquired with the patient in a conventional recumbent position; Figure 2 is of the same patient, but in a standing position during extension. The standing-extension image demonstrates marked stenosis of the central spinal canal resulting from posterior disc protrusions extending into the anterior aspect of the spinal canal and focal ligamentous infolding posteriorly.

Note that the resulting compression of the underlying spinal cord is not evident on the recumbent scan. (Scanning parameters for sagittal scans: TR=3000 msec; TE = 160 msec; ETL = 15; 4.0 mm slice; scan time: 2:55 min - recumbent, 3:19 min - standing extension.)

Figure 1:
Sagittal T2-weighted fast spin echo (FSE) image in recumbent position



Figure 2:
Sagittal T2-weighted FSE image in standing position during extension



The gradient recalled echo T2*-weighted axial images are from the same patient. The standing extension image (Figure 4) demonstrates a focal posterior disc herniation at C4/5 level that is not visible on the recumbent scan (Figure 3). Patient positioning and dynamic maneuvers clearly play a critical role in detecting clinically significant spinal pathology.

Note that a final diagnosis based only on the recumbent scan would result in a missed pathologic diagnosis. (Scanning parameters for axial scans: TR = 506 msec; TE = 22 msec; FA = 20°; 4.0 mm slice; scan time: 5:04 min.)

Figure 3: Axial T2*-weighted gradient recalled echo (GRE) image of patient in recumbent position

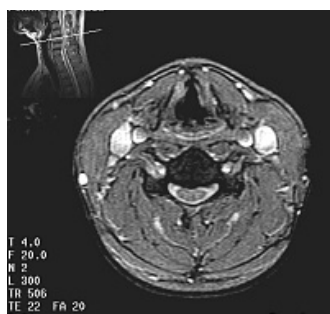


Figure 4: Axial T2*-weighted GRE image of patient in standing-extension



Diagnosis: Fluctuating intervertebral disc herniation dependent upon patient position and dynamic physical maneuver