

Scientific Publications

The Clinical Significance
of UPRIGHT® Imaging



“Missed Spondylolisthesis in Static MRIs
But Found in Dynamic MRIs in the Patients
with Low Back Pain”

S.W. Hong, M.D. et al., **UCLA School of Medicine,**
Albert Einstein College of Medicine & Hacettepe University
The Spine Journal 7 (2007) p. 69S

“In the [510] patients with back pain, **missed spondylolisthesis** in neutral MRIs but found in flexion MRIs is **18.1%** for all the levels in the condition that the spondylolisthesis is considered as more than 3 mm translation”

L3-4 was the “most commonly missed” at 38.7%
followed by L4-5 at 35.1%



“Positional MRI: A Valuable Tool in the Assessment of Cervical Disc Bulge”

P. Moazzaz, M.D. et al., **UCLA School of Medicine,**
The Spine Journal 7 (2007) p. 395

In a study of 163 patients with radicular cervical spine symptoms:

“A significant increase in the degree of cervical disc bulge was found by examining flexion and extension views as compared to neutral views alone”

“The study ... suggests that extension MRI views yield a higher detection rate of missed cervical disc bulges than flexion views”

“Using 2.0 mm of disc bulge as a cutoff value, the false negative ratio for the neutral position alone compared to flexion and extension was **25.08%**”



“The Effect of Lumbar Flexion and Extension on the Central Canal with Dynamic MRI”

F. Wei, M.D. et al., **UCLA School of Medicine,**
The Spine Journal 7 (2007) p. 385

In a study of 461 patients with lower back pain:

“Dynamic MRI can demonstrate spinal canal diameter change in lumbar flexion and extension and also show the amount of change in the cross-sectional area with the highest accuracy”

“The relief of spinal stenosis in flexion is greater when the degree of degeneration is more severe”

**“Missed Lumbar Disc Herniations Diagnosed
With Kinetic Magnetic Resonance Imaging”**

J. Zou, M.D. et al., Department of Orthopedic Surgery, UCLA &
Department of Orthopedic Surgery, Soochow University
SPINE7 Volume 3, number 5 (2007) E140-E144

In a study of 553 patients with symptomatic back pain:

“A significant increase in the degree of lumbar disc herniation
was found by examining flexion and extension views
when compared with neutral views alone”

For patients with normal or < 3 mm bulge in neutral,
19.46% (15.29%) demonstrated an increase in
herniation to > 3 mm in extension (*flexion*)



**“Positional Upright Imaging of the Lumbar
Spine Modifies the Management of Low
Back Pain & Sciatica”**

F.W. Smith, M.D. et al., University of Aberdeen, Scotland
Paper presented at the ESSR (2005) Oxford, England
Published in Clinical MRI, Vol. 15, Issue 3 (2006)

In a study of 25 patients with low back pain and sciatica referred to
the Upright MRI for lumbar spine MRIs following at least
one prior “normal” recumbent MRI within 6 months of referral:

“13 patients [52%] demonstrated abnormalities “in one or more of the
seated postures that were not evident in the ... supine examination”

“Each of the 13 patients has undergone appropriate surgery
and 6 months post-surgery they remain symptom free”



“Upright, Positional MRI Improves Diagnosis in Patients with Low Back Pain and Sciatica”

Francis W Smith, MD and Sandro Galea-Soler M.D.
Department of Radiology, University of Aberdeen, MRI Centre,
Woodend Hospital, Eday Road, Aberdeen AB15 6XS, Scotland, U.K.

Paper presented at SpineWeek2008 Geneva, Switzerland 30-May-2008

A study of 111 patients with “a previous non-diagnostic supine MRI scan, or a scan with inconclusive findings”

“Of the 111 patients, 47 [42%] demonstrated abnormalities, in one or more of the erect or seated positions, correlating with their symptoms and not evident on the supine scan. Abnormalities detected included 26 cases of spinal instability, 28 lateral disc prolapse and 10 circumferential disc prolapse with fluctuating spinal stenosis.”

“Dynamic Weight-bearing Cervical Magnetic Resonance Imaging: Technical Review and Preliminary Results”

T. Vitaz, M.D. et al., *Southern Medical Journal* (2004)
Department of Neurological Surgery,
University of Louisville School of Medicine

20 patients with neck pain and symptoms consistent with radiculopathy or myelopathy were scanned upright in a GE 0.5T Signa SP vertical gap MR imaging system designed for MR image-guided surgery.

“When only static supine MRI scanning is performed on these patients, the true abnormality may be overlooked and inappropriate surgical plans instituted because of a lack of illustration of the changes that occur with movement.”

“Positional MR Imaging of the Lumbar Spine: Does it Demonstrate Nerve Root Compromise not Visible at Conventional MR Imaging ?”

D. Weishaupt, M.D. et al., *RADIOLOGY* (2000) 215:247-253
Institute of Diagnostic Radiology, University Hospital, Zurich

30 patients with chronic low back pain unresponsive to non-surgical treatment were studied in the GE 0.5T Signa SP vertical gap MR imaging system. They were scanned upright seated and their images compared with those of the same patients scanned supine in a Siemens 1.0T superconducting conventional MR imaging system.

“Positional MR imaging more frequently demonstrates minor neural compromise than does conventional MR imaging. Positional pain differences are related to position-dependent changes in foraminal size.”