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DYNAMIC MRI OF THE LUMBAR SPINE IN THE UPRIGHT POSITION MODIFIES PATIENT MANAGEMENT

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PURPOSE: To determine the value of upright MRI examination of the lumbar spine.

METHOD AND METHOD AND MATERIALS: One-hundred and fourteen patients who had been referred for positional MRI studies of their lumbar spine had their scans reviewed. Three patients (all male) were excluded because of the non-availability of an accompanying clinical history. One-hundred and eleven patients (53 females, age range 24-77 years, and 58 males, age range 21-80 years) were included in the study. Reasons for patients' referral included nondiagnostic supine MRI scans, or scans with dubious findings, as well as assessment for spinal instability/dynamic spinal stenosis. All the examinations were performed using an 'Upright' 0.6T scanner (FONAR Corp., Melville, NY). Each MRI scan included a repeat spine examination, in addition to imaging in the standing and seated (neutral, extended and flexed) positions. The standard protocol was of eleven T2W images in the sagittal plane, as well as three axial T2W images through each of the 5 lumbar intervertebral discs. Two experienced radiologists reviewed the images, and their findings were then correlated with the patients' symptomatology.

RESULTS: Of the one-hundred eleven patients, forty-seven (27 males, 20 females) demonstrated abnormalities, in one or more of the erect or seated positions, which correlated with their symptoms and were not evident on the conventional supine scan. The abnormalities detected included 26 cases of spinal instability secondary to hypermobile discs, 28 lateral disc prolapses and ten central disc prolapses.

CONCLUSION: Clinically relevant abnormalities with the potential to guide clinicians and patients towards optimal management were detected exclusively in the seated or standing positions in 42% of this patient cohort. Patients with inconclusive supine MRI scans of the lumbar spine should therefore be offered the opportunity to be scanned dynamically.