

Medical Policy Manual

Topic: Positional Magnetic Resonance Imaging (MRI)

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Section: Radiology

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IMPORTANT REMINDER

Medical Policies are developed to provide guidance for members and providers regarding coverage in accordance with contract terms. Benefit determinations are based in all cases on the applicable contract language. To the extent there may be any conflict between the Medical Policy and contract language, the contract language takes precedence.

PLEASE NOTE: Contracts exclude from coverage, among other things, services or procedures that are considered investigational or cosmetic. Providers may bill members for services or procedures that are considered investigational or cosmetic. Providers are encouraged to inform members before rendering such services that the members are likely to be financially responsible for the cost of these services.

DESCRIPTION

Conventional magnetic resonance imaging (MRI) systems acquire images with the patient in the horizontal, lying position. Recently, a new fully open MRI system, the upright or positional MRI, has been developed which allows multiple positions in addition to horizontal imaging. This system allows partial or full weight bearing, as well as simultaneous movement or positioning of the patient's whole body or individual body parts.

It is theorized that imaging the body in positions related to the central loading of the spine, which occurs when standing upright or sitting or in the specific position related to the patient's clinical symptoms, may lead to more accurate diagnosis. This is being evaluated in patients with suspected nerve root compression and in some cases of spondylolisthesis, and may be particularly relevant in cases where disease is not visible on a horizontal MRI.

One concern with positional MRI is the field strength of the scanners. Today's clinical MRI scanners may operate at a field strength between 0.1 Tesla (T) to 3 T and are classified as either low-field (<0.5 T), mid-field (0.5-1.0 T), or high-field (>1.0 T). Low-field MRI is typically used in open scanners. Open scanners are designed for use during interventional or intraoperative procedures, when a conventional design is contraindicated (e.g., an obese or claustrophobic patient), or for changes in patient positioning.

In general, higher field strength results in an increase in signal-to-noise ratio, spatial resolution, contrast and speed. Thus, low-field scanners produce poorer-quality images compared to high-field scanners, and

the longer acquisition times with low-field scanners increases the possibility of image degradation due to patient movement. However, field strength has less of an effect on the contrast-to-noise ratio, which determines the extent to which adjacent structures can be distinguished from one another.

Upright[®] MRI (FONAR Corporation) has 510(k) marketing clearance from the U.S. Food and Drug Administration (FDA) for an MRI system that performs positional MRI scans.

MEDICAL POLICY CRITERIA

Positional or upright MRI for the diagnosis and management of any condition, including but not limited to cervical, thoracic or lumbosacral back pain, is considered **investigational**.

SCIENTIFIC EVIDENCE

In evaluating positional MRI, it is important to first determine if this approach results in additional findings that impact and improve clinical management of the patient compared with other standard imaging.

Randomized controlled trials are needed to determine the following:

- Characteristics of patients who might benefit from positional MRI studies;
- Clinical benefit of basing treatment decisions, including surgery, on these additional findings; and
- How this technique might replace current diagnostic tests such as myelography.

Literature Appraisal

Systematic Reviews

A systematic review of emerging MRI technologies for musculoskeletal imaging under loading stress was prepared by the Tufts Medical Center Evidence-based Practice Center for the Agency for Healthcare Research and Quality (AHRQ) in 2011.^[1] The review analyzed 57 studies using MRI under physiologic loading stress in an upright or sitting position or under axial load using a compression device. The majority of studies (37 cross-sectional studies and 13 case-control studies) reported on the anatomical measurements rather than patient-relevant endpoints. The most commonly imaged body region was the lumbar spine. Fifteen of 57 studies used at least 2 imaging tests and reported on diagnostic or patient-relevant outcomes but did not report meaningful information on the relative performance of the tests. The potential effect on image quality of low magnetic field strengths (<0.6 Tesla) in weight-bearing MRI scanners was not assessed. In 10 studies that included information on adverse effects, 5% to 15% of participants reported new-onset or worsening pain and neuropathy during MRI under loading stress. The systematic review concluded that, despite the large number of available studies, the evidence is insufficient to support the clinical utility of MRI under loading stress for musculoskeletal conditions.

Randomized Controlled Trials (RCTs)

There are no RCTs comparing how the use of positional MRI versus other standard imaging alters patient treatment plans or health outcomes.

Other Studies

A number of studies have reported that positional MRI may show abnormalities in patients which were not seen with conventional MRI. However, no studies indicated how these results changed or affected the patient's treatment plan.^[2-31]

Clinical Practice Guidelines

American College of Radiology (ACR)^[32]

In 2012, the ACR published an updated guideline in collaboration with the American Society of Neuroradiology (ASNR) and the Society of Computed Body Tomography and Magnetic Resonance (SCBT-MR). This guideline briefly described the purpose of upright MRI but did not include an analysis of evidence or recommendations.

Summary

The diagnostic accuracy of positional MRI has not been investigated in well-designed studies, and there are no trials that evaluate clinical outcomes in patients for whom treatment decisions were based on positional MRI compared with standard diagnostic imaging. Without these comparisons, it is not known whether positional MRI offers advantages with respect to clinical management, including surgical decision-making, and whether those decisions result in improved health outcomes. Therefore, positional MRI is considered investigational.

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CROSS REFERENCES

None

CODES	NUMBER	DESCRIPTION
There is no specific code for positional MRI, which should be reported with an unlisted procedures code such as 76498.		
CPT	76498	Unlisted magnetic resonance procedure (eg, diagnostic, interventional)
HCPCS	None	