



Kansas City

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Dynamic Spinal Visualization

Policy Number: 6.01.46
Origination: 2/2006

Last Review: 2/2014
Next Review: 2/2015

Policy

Blue Cross and Blue Shield of Kansas City (Blue KC) will not provide coverage for dynamic spinal visualization (digital motion x-ray, cineradiography, videofluoroscopy). This is considered investigational.

When Policy Topic is covered

Not Applicable

When Policy Topic is not covered

The use of dynamic spinal visualization is considered **investigational**.

Description of Procedure or Service

Dynamic spinal visualization is a general term addressing different imaging technologies, including digital motion x-ray and videofluoroscopy (also known as cineradiography) that allow the simultaneous visualization of movement of internal body structures such as the spine (vertebrae) with external body movement. These technologies have been proposed for the evaluation of spinal disorders including low back pain.

Background

Most spinal visualization methods use x-rays to create images either on film, video monitor, or computer screen. Digital motion x-ray involves the use of either film x-ray or computer-based x-ray 'snapshots' taken in sequence as a patient moves. Film x-rays are digitized into a computer for manipulation, while computer-based x-rays are automatically created in a digital format. Using a computer program, the digitized snapshots are then put in order and played on a video monitor, creating a moving image of the inside of the body. This moving image can then be evaluated by a physician alone or by using a computer that evaluates several aspects of the body's structure, such as intervertebral flexion and extension, to determine the presence or absence of abnormalities.

Videofluoroscopy and cineradiography are different names for the same procedure, which uses a technique called fluoroscopy to create real-time video images of internal structures of the body. Unlike standard x-rays, which take a single picture at one point in time, fluoroscopy provides motion pictures of the body. The results of these techniques can be displayed on a video monitor as the procedure is being conducted, as well as recorded, to allow computer analysis or evaluation at a later time. Like digital motion x-ray, the results can be evaluated by a physician alone or with the assistance of computer analysis software.

Dynamic magnetic resonance imaging (MRI) is also being developed for imaging of the cervical spine. This technique uses an MRI-compatible stepless motorized positioning device (NeuroSwing, Fresenius/Siemens) and a real-time true fast imaging with steady-state precession (FISP) sequence to provide passive kinematic imaging of the cervical spine. The quality of the images is lower than a typical MRI sequence, but is proposed to be adequate to observe changes in the alignment of vertebral

bodies, the width of the spinal canal, and the spinal cord. Higher-resolution imaging can be performed at the end positions of flexion and extension.

Rationale

This policy was created in 2006 and updated periodically using the MEDLINE database. The most recent literature update was performed through August 15, 2013.

At the time this policy was created, the literature evaluating the clinical utility of dynamic spinal visualization techniques, including digital motion x-ray and cineradiography (videofluoroscopy) for the evaluation and assessment of the spine, was limited to a few studies involving small numbers of participants. (1-3) No evidence was identified to indicate that clinical use improves health outcomes. While there were reports of the correlation of this technique to disc degeneration, (4) no studies had evaluated the incremental value of this information compared to the standard evaluation. In addition, although some studies had shown that abnormalities in spinal motion are found in individuals with low back pain, particularly those with spondylolisthesis, the test did not always separate those with disease from those without disease. (5)

As of the most recent literature update, the evidence on dynamic spinal visualization remains predominantly of comparisons of spine kinetics in patients with neck or back pain with healthy controls. For example, Teyhen et al. compared 20 patients with lower back pain to 20 healthy controls to provide construct validity for a clinical prediction rule that would identify patients likely to benefit from stabilization exercises, (6) while Ahmadi and colleagues used digital videofluoroscopy to compare 15 patients with lower back pain and 15 controls to assist in identifying better criteria for diagnosis of lumbar segmental instability. (7) Breen et al. reported on objective spinal motion imaging assessment (OSMIA) in 30 healthy volunteers using a passive motion table and automated frame-to-frame registration of vertebral position. (8) Another study from 2009 used dynamic fluoroscopy to assess lateral flexion in 30 healthy controls, noting that data pooling from multiple studies would be needed to establish a complete database of reference limits from asymptomatic individuals. (9)

A feasibility study of dynamic magnetic resonance imaging (MRI) was reported in 2012. (10) This study used a prototype of the NeuroSwing positioning device and evaluated cervical spine kinematics in 32 patients who had previously undergone anterior cervical discectomy and fusion (ACDF). The quality of images was considered to be adequate, although there was some artifact from the titanium implants used in ACDF.

Summary

The evidence at this time is insufficient to evaluate the effect on health outcomes of digital motion x-rays, cineradiography/videofluoroscopy, or dynamic MRI of the spine for any indication. Therefore, dynamic spinal visualization is considered investigational.

Medicare National Coverage

There is no national coverage determination.

References

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Billing Coding/Physician Documentation Information

- 76120** Cineradiography/videoradiography, except where specifically included
- 76125** Cineradiography/videoradiography to complement routine examination (List separately in addition to code for primary procedure)
- 76496** Unlisted fluoroscopic procedure (eg, diagnostic, interventional)

Additional Policy Key Words

Digital Spinal Analysis (see 11/12/2012 email from B. Sitzmann)

Policy Implementation/Update Information

- 2/1/06 New policy; considered investigational.
- 2/1/07 No policy statement changes.
- 2/1/08 No policy statement changes.
- 2/1/09 No policy statement changes.
- 2/1/10 No policy statement changes.
- 2/1/11 No policy statement changes.
- 2/1/12 No policy statement changes.
- 2/1/13 No policy statement changes.
- 2/1/14 No policy statement changes.

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