Weight-Bearing MRI in Modern Spine Practice: Addressing Milliman Criteria

Adding *Weight* to Your Surgical Pre–Authorization Application

DISCLOSURES

Douglas K. Smith MD has no business relationship with Esaote USA and has nothing to disclose.

Dr. Smith is the Founder and Owner of Musculoskeletal Imaging Consultants LLC and Primo Teleradiology LLC.





History of Spinal Imaging

1895: Roentgen discovers X-ray.1921: Sicard reports oil myelogram1944: Pantopaque replaces oil

1976: Myelogram-CT 1980s: Water soluble





History of Spinal Imaging

1978: First MRI scanner. Indomitable1981: First MRI commercially available1980-90s: Declining myelography





1996: FONAR: Stand-Up™ MRI

1997+ No new 1G upright MRIs

2000s: Resurgence CT/myelo

History of Spinal Imaging

2008: Easote introduced2nd generation WeightBearing MRI into Europe.

2012: Esaote obtains FDA approval for G-Scan Brio.

2nd generation (2GMRI™) weight-bearing MRI and provides both supine and vertical MRI images. XP technology and Improved Surface Coils.

Simulated Weight-Bearing Unsatisfying Substitute Mid-1990s-2012



Compression load straps between waist belt and platform under feet.

Increases lumbar lordosis but not much else.



MRI Terminology "Choosing an MRI is more than Tesla"

MRI Scanner Gradient Magnets



High Field Strength (1.5T or 3.0T) Cryogens generate low temperatures Expensive purchase/maintenance. Closed tube design.

Low Field Strength (0.2-0.5T)

Permanent electromagnet. Two parallel plates with open sides. Much lower maintenance costs.



Frequently Asked Questions

- 1. What does a 2nd Generation weightbearing MRI Esaote G-Scan Brio MRI Cost to purchase and operate?
- 2. How does image quality compare to high field MRI?
- 3. What does 2G WBMRI show that makes it unique?
- 4. Would a 2G MRI be a profitable "in-office ancillary"?
- 5. How does Esoate Brio Tilting MRI contribute to a synergistic approach to meeting Milliman criteria?



High vs. Low Field MRI Relative Purchase Costs

Isolated MRI Costs (MRI + Shielding)

Whole Body MRI Requires expensive shielding of field.

Esoate G-Scan Brio utilizes RF Case.



Esaote figures.



FONAR c/w Esaote G-Scan Brio

FONAR Stand-Up™ MRI

First Generation Weight Bearing MRI \$1.5 Million 2-3X Installation Cost Service ≈ \$12K per month High Electrical Costs

Esaote G-Scan Brio MRI

Second Generation Weight Bearing MRI \$800k MRI/Shield <50% Installation/Maintenance



Esaote Shielding Case Lower Installation Cost



Single room installation

- Installation surface: 270 Sq.Ft.
- Height of the room: Minimal 9 ft. for weight bearing exam of spine and knee Suggested 10.6 ft. for weight bearing exam of spine, knee and ankle
- Total weight: 7.9 tons
- · Power line 5 KW
- No Cryogens
- Dedicated shielding case by Esaote

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Field Strength and Spine MRI You Make the Call! 3T, 1.5T, or .25T



Field Strength and Spine MRI





Improved Esaote Multi-Channel Surface Receiver Coils









Frequently Asked Questions

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- 2. How does image quality compare to high field MRI?
- 3. What makes Esoate G-Scan Brio unique for spine imaging?
- 4. Would a 2G MRI be a profitable "in-office ancillary"?
- 5. Would it be more profitable to joint venture with a partner with technical/management expertise?



Claustrophobia

Closed Tube

places head deep within bore of MRI

"TUBE of TERROR"

Esaote G-Scan Brio

Less patient isolation

Less noise & Less claustrophobia



Metallic Surgical Implants

Pedicle Screws at 1.5T



Metallic Implants Common in Spine Surgery

Stronger Magnet ⇒ Larger Artifact

Pedicle Screws at 1.5T

Field Strength and Metallic Artifact



Metallic implants produce artifact directly proportional to the magnetic field strength.

Stronger MRI = More Artifact

Metallic Artifact Reduction Sequences (MARS) High Field (1.5T)

Low field MRI ideal for metallic implant imaging



Fractured Fixation Screw MARS Protocol on G-Scan



Fractured fixation screw of anterior fixation plate.

Positional Radiculopathy

Dynamic Foraminal Stenosis



Body weight compresses discs, facet joints override and disc compresses nerve root in the neural foramen.



Dynamic Central Stenosis

Supine at 1.5T



Supine G-Scan Brio



Standing G-Scan Brio



Positional Cervical Myelopathy



Positional Symptoms Require Positional MRI! Flexion-Extension MRI Demonstrates Cord Compression Not Visible in Neutral.

Lumbar Spinal Instability Weight-Bearing Stress Test

Supine Weight Bearing



Standing weight-bearing MRI may demonstrate spinal instability occult while supine.

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Multiscan Discount



Practice Examples Case Examples

Example 1: Only costs are MRI with simple build out and overhead absorbed by practice. Favorable payor mix. No MSD. Esaote figures show break even at 4-5 MRIs/day. Example 2: MRI project pays cost for build out and rent/utilities but absorbs IT/compliance costs. Medicare rates, 25% MSD, 5% non-collection. Est. 5.5-7 MRIs/day. Example 3: MRI absorbs all costs (\$150k build out, rent and expenses and PACS/RIS, 50% MSD. Estimated 6.5-7.5/day.

* Each practice is different. Detailed proforma recommended.

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Clinical Care Guidelines Actuary Creations

- Three actuaries dominate field:
 "MCG" formerly "Milliman Care Guidelines
 Zynx Health
 McKesson (InterQual)
- Guidelines are specific to diagnosis and proposed surgical treatment (CPT) code.
- Unless the guidelines are specifically documented in pre-authorization request, payor will likely deny pre-authorization as "not medically necessary".

Milliman Care Guidelines General Requirements

Signs: Objective Measures + Symptoms: Subjective Reports + Objective Diagnostic Imaging Findings + Supportive Objective Tests (EMG, Nerve blocks) + History of Non-operative Conservative Treatment

* All information must be specifically recorded and submitted as part of surgical pre-authorization application.

Meeting Milliman Criteria 4Ts: Best Practice Components



Radiology Reporting Common Practice



Radiology Reporting Common Practice



Radiology Reporting Current Practice



Meeting Milliman Criteria Radiologist Value





What is the Difference Worth to You?

Check the Care Guidelines box the First Time

Expensive Appeals Process





When the cheapest radiology reading.... is not the least expensive!

Productive Surgical Procedure

Meeting Milliman Criteria Collaborative Effort





Integrated Radiology Reporting Current State-of-Art



Milliman Criteria Lumbar Spinal Stenosis Fusion Criteria

Lumbar spinal stenosis with ALL of the following:

- Associated lumbar spondylolisthesis
- 1 or more of the following:

Progressive or severe symptoms of neurogenic claudication Back pain, neurogenic claudlcation symptoms, or radicular pain associated with ALL of the following: Significant functional impairment Listhesis demonstrated on plain x-rays Central, lateral recess or foraminal stenosis demonstrated on imaging Failure at least 3 months conservative care

Milliman Criteria Cervical Fusion for Myelopathy

"Cervical myelopathy resulting from spinal cord compression as evidenced by 1 or more of the following:

Clinical symptoms of myelopathy:

e.g. Clumsiness of hands, Urinary urgency, Bowel or bladder incontinence, Frequent falls.

Clinical signs of myelopathy:

e.g. Hyperreflexia, Hoffmann sign, Increased tone or spacticity, Loss of thenar or hypothenar eminence, Galt abnormality, Positive Babinski sign

Diagnostic imaging positive for cord compression from either herniated disk or osteophyte.

Integrated Radiology Reporting Radiology as a Service®



Positional Myelopathy *Weight-Bearing and Flexion*



Integrated Radiology Reporting Current State-of-Art



Lumbar Discectomy Criteria

"Nerve or spinal cord impingement seen on imaging studies"



Lumbar Discectomy Criteria

- Rapidly progressive neurologic findings with imaging evidence of pathology that correlates with clinical findings
 Elective surgery needed as indicated by ALL of the following being present:
 - Herniated disk with ALL of the following:
 - Nerve or spinal cord impingement seen on imaging studies
 - Clinical findings consistent with impingement
 - All major psychosocial and substance abuse issues have been addressed.
 - Severe symptoms or findings that have not Improved after at least 6 weeks of conservative therapy, including 1 or more of the following: Severe disabling radiculopathy Clinical findings of nerve root compromise

Milliman Criteria MRI & Pain Diagram Correlation



Integrated Radiology Reporting Level 2 Report



Level 2 Integrated Radiology Report

1. Comprehensive customized radiology report

Detailed report including all pertinent imaging studies Correlates with clinical and auxiliary testing information Includes attached annotated key radiology images.

2. Specifically addresses each Milliman criteria

Specific to medical condition (i.e. cervical myeolopathy) Planned surgical procedure with CPT code(s).

3. Surgical pre-authorization or appeal process

4. Benefitting surgeon pays involved fees.

Esaote G-Scan Brio: "The MRI Worth Weighting For!™"

> Douglas K. Smith, M.D. Musculoskeletal Imaging Consultants LLC



For more information about MRI: <u>www.GscanBrio.com</u> www.esaoteusa.com www.msktelerads.com 210-587-6937 Call us: "We're StandUp Guys®"

