

THE JACKSON IMAGER

| Radiology Group, PA | Jackson Imaging Center, Montgomery, AL

Center Beam

Paradigm Shift Underway in Prostate Cancer Detection

- ❖ Do you know your risk?
- ❖ Talk to your primary care physician and urologist to see how you should be screened

Evidence Exposed

High Resolution Prostate MRI

- ❖ Offers single most accurate imaging assessment of prostate cancer

Tech Talk

How is Prostate MRI done?

- ❖ Non-invasive, Multiparametric Imaging

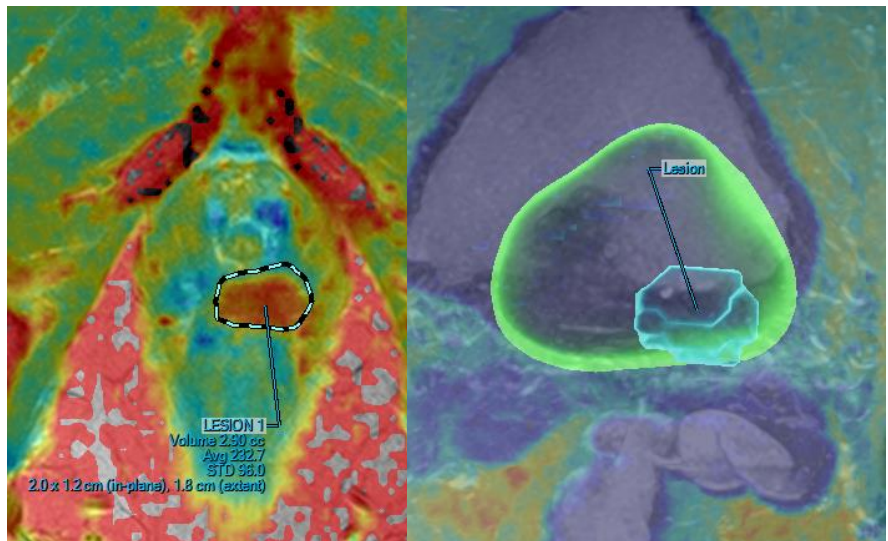
Behind the Lead Apron

Who interprets prostate MRI?

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High Resolution 3T Prostate MRI



3T MRI images showing adc/T2 color fusion image (L) and volume-rendered image (R) of a cancerous lesion of the prostate gland.

- ❖ Prostate Cancer is very common, 1 in 7 men will be diagnosed during his lifetime.¹
- ❖ 60% of cases are diagnosed in men aged 65 or older, and it is rare before age 40.¹
- ❖ Prostate cancer is the third leading cause of death in American men behind lung cancer and colorectal cancer.¹
- ❖ Traditionally, men are screened with physical exam and lab test, Prostate Specific Antigen (PSA).
- ❖ **High resolution prostate MRI can further specify risk of cancer and direct biopsy to any suspicious areas.**

Evidence Exposed

Multiparametric, high resolution prostate MRI has been validated as the single most accurate imaging assessment of local prostate cancer and to assess for regional spread. It aids in prostate cancer management, including detection, biopsy planning, treatment planning and follow-up².

Patients with elevated PSA related to underlying prostate cancer have earlier and more accurate cancer detection when they undergo MRI compared to those who do not. Also, patients with elevated PSA who have had negative biopsies benefit from prostate MRI where a large percentage are found to have tumors on MRI (59%), and of those most are clinically significant (93%)². The American Urologic Association consensus statement supports patients with initial negative biopsy to undergo repeat biopsy when MRI suspicious³.

Also, MRI has also been shown to have a high positive predictive value (87%) in detection of clinically problematic anterior tumors, and thus directs biopsy to these often under sampled regions².

Prostate MRI strengthens detection of extracapsular extension of cancerous lesions, which changes prognosis and has valuable implications for preoperative staging and treatment planning⁴.

Tech Talk

Multiparametric = Multiple Parameters

Prostate MRI evaluates the gland using multiple parameters:

- ❖ T2 -Measures "dephasing time" of the protons within the tissue after excited with radiofrequency pulse. Areas suspicious for prostate cancer have a decreased dephasing time and manifest as low MRI signal within the gland.
- ❖ Diffusion Imaging (DWI/adc)- Strong magnetic gradients (magnetic fields) are applied to the tissue. Areas suspicious for cancer "restrict" water movement, thus

manifesting as altered signal within that portion of the gland.

- ❖ Dynamic Contrast Enhancement (DCE) - A multiphasic, post-contrast scan reveals the kinetics of enhancement. Suspicious areas may have increased enhancement.

Analysis of the above parameters is used to code the MRI based on likelihood of cancer present or not :

PIRADS-1: Very low

PIRADS-2: Low

PIRADS-3: Intermediate

PIRADS-4: High

PIRADS-5: Very high (clinically significant cancer is highly likely to be present)

Behind the Lead Apron

At Jackson Imaging Center, there are 3 board certified radiology physicians that have extensive experience with MRI and have completed extra course work in prostate MRI (Drs. Gary Scott, Brad Thomas and George Wakefield). Each prostate MRI exam is interpreted in conjunction with at least 2 of the radiologists. The report is coded based on suspicion and then relayed to the referring physician who will make final recommendations to the patient based on the patient's individual health data.

References

1. cancer.org <https://www.cancer.org/cancer/prostate-cancer/about/key-statistics.html>
2. Murphy G, Haider M, Ghai S, Sreeharsha B. The Expanding Role of MRI in Prostate Cancer: AJR:201, Dec2013 pp. 1229-1238.
3. Rosenkrantz AB, Verma S, Choyke P, et al. Prostate Magnetic Resonance Imaging and Magnetic Resonance Imaging Targeted Biopsy in Patients with a Prior Negative Biopsy: A Consensus Statement by AUA and SAR. Dec2016.Vol 196, Issue 6, Pgs 1613-18.
4. Woo S, Cho JY, Kim,SY, Kim SH. Extracapsular Extension if Prostate Cancer: Added Value of Diffusion-Weighted MRI in Patients with Equivocal Findings on T2-weighted Imaging. AJR Feb2015, Vol204, No2. W169-W175.