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Musculoskeletal Ultrasound Imaging

Why We May Recommend Musculoskeletal Ultrasound Evaluation Of Your Injury Instead Of An MRI?

Diagnostic **M**usculo**SK**eletal **U**ltra**S**ound (MSKUS) has many advantages over MRI for evaluation of ligament and tendon injuries. Most patients are surprised when we tell them that MSKUS has the same sensitivity and specificity as MRI for many injuries. Sensitivity is the likelihood that a positive test proves you have a diagnosis and specificity of a test confirms that a negative test proves you don't have a specific diagnosis.

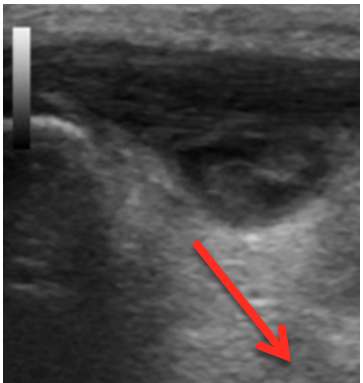
For rotator cuff tears of the shoulder MSKUS has equal ability to find a tear, but has the advantage of better definition to find small intra-substance tears. We can also evaluate you for nerve injury and a functional evaluation to see impingement syndromes that can't be identified on MRI.

Some of the advantages of MSKUS over MRI are listed below.

- ☑ Magnified images.
- ☑ Better resolution of small ligaments and tendons near the surface of the joint.
- ☑ Ability to stress ligament during evaluation.
- ☑ Better resolution of nerves.
- ☑ Functional movement evaluation.
- ☑ Vascular flow evaluation with Doppler ultrasound.
- ☑ Evaluation of small inflammatory neo-vessels.
- ☑ Cost effective. A complete MSKUS study costs just a fraction of an MRI.
- ☑ To confirm a small ligament tear a limited MSKUS study can be less than a hundred dollars.
- ☑ For injury to bone or ligament deep inside a joint, MRI may provide better imaging.

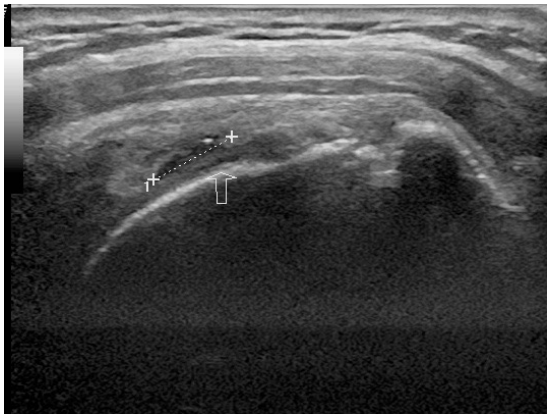
Best Imaging Quality!

At Performance Injury Care & Sports Medicine we are proud to be the leaders of MSKUS in the state of Montana. Dr. Phillip M. Steele and Abbey M. Barnhart, PA-C are two of the few providers certified in musculoskeletal ultrasound (RMSK) in Montana. Dr Steele serves as faculty for many national courses for MSKUS diagnosis and treatment of muscular and tendon injuries. Dr. Eugene 'Buzz' Walton also uses this diagnostic modality under Dr. Steele's guidance. In addition to our level of experience, we also have the highest quality of imaging in the region for MSKUS. Our new GE Logiq S8 has the highest level of imaging performance in the region and we feel strongly that no clinic in Montana or this region has more training, expertise or imaging quality than what is available to you here in Helena.



These images compare MRI (left) and diagnostic MSKUS (right) for the same patella tendon tear.

Both studies show the tear well, however MSKUS shows the tear with better resolution and when done in conjunction with a functional exam we were able to recommend conservative treatment instead of surgical. With diagnostic MSKUS the final diagnosis could have been made for considerably less expense than MRI for similar sensitivity and specificity of an injury.



Why Do We Use Ultrasound Guidance For Many Of Our Injections?

Physicians are not as good at placing a needle into a tendon or joint as we might like to think. Most studies have shown that orthopedic surgeons are only in major joints about 70-80% of the time. Studies on injections to smaller joints such as the acromioclavicular joint are only 50%. In other words, you have failed to get better after an injection therapy and they may now be recommending surgery. There was a real chance that the physician missed the joint and that's why you aren't better. It might be best practice to make future medical care decisions based on knowing your injection was absolutely in the joint. Multiple studies have shown the exceptional accuracy of ultrasound guided injections.

Diagnosis Ultrasound showing a tear to the supraspinatus tendon.

We Can See Neurovascular structures!

In addition to seeing the soft tissue, we can follow nerves over multiple joints and evaluate them down through areas looking for entrapment syndromes. Nerve swelling and loss of its normal appearance helps us to identify constrictions that can cause pain. MRI has significant limitations in identifying nerve pain syndromes as nerves typically cross through many tissue plains, joints and muscular layers. EMG testing can be used for evaluation of nerve entrapments, having good sensitivity if the test is positive, but many times a negative test is inconclusive as EMG testing can have poor specificity. In other words a sensitive test when positive has a high likelihood of correctly identifying those with a nerve entrapment. A specific test will correctly identify those that don't have a disease. As many nerve entrapment syndromes are to the very small cutaneous sensory nerves, these painful conditions can be difficult to correctly diagnose. With MSKUS, Dr. Steele has the most training in diagnostic nerve evaluation in the Rocky Mountain region. This not only allows him to correctly identify many painful nerve entrapment syndromes but he can also treat them using a technique called hydroneurolysis.

Hydroneurolysis?

With direct visualization of entrapped nerves, Dr. Steele can carefully advance a needle to the area sounding the nerve and inject a fluid mixture. By using this technique we can frequently release nerve entrapment, resolving your pain.

Hydroneurolysis of a small nerve