DYNAMIC, DIAGNOSTIC ULTRASOUND OF THE KNEE

THE ORTHOPEDIC VIEWPOINT

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DISCLOSURES

- I am friends with Scott Primack
  - a Board Certified Tequila Expert
- I am an Orthopedic Surgeon and thus by definition the Enemy
THE ORTHOPEDIST
THE PHYSICIAN ARMED WITH AN ULTRASOUND

Imagination is more important than knowledge.

-Albert Einstein
EXPLAINING THE VALUE OF ULTRASOUND TO THE ORTHOPEDIST
THE DILEMMA

- Few, if any orthopedist are trained on the use dynamic ultrasound - “I am not a OB/GYN”
  - Orthopedic offices visits times are not set up to preform Diagnosis Ultrasounds
- Fewer are trained to read and interpret ultrasound findings – “the black and grey wavy lines”
  - Do you know how long it took me to read an MRI?
- The ugly truth, many Orthopedist have financial investments in free standing (or worse, in office) MRI Centers
WHEN YOU KNOW SOMEONE IS PHONY

BUT IT'S A WASTE OF TIME CALLING THEM OUT
ULTRASOUND OF THE KNEE – THE FACTS

Ultrasound has a moderate to high diagnostic value for Medial and Lateral Meniscal Tears


Ultrasound has moderate to high diagnostic value for Full Anterior Cruciate Ligament (ACL) Tears

ULTRASOUND OF THE KNEE - THE FACTS

- Ultrasounds has high diagnostic value at ruling in Lateral Collateral Ligament (LCL) Tears, but low diagnostic value in ruling them out

- Ultrasound has moderate diagnostic value for injury to the Popliteal Tendon
ULTRASOUND OF THE KNEE – THE FACTS
I was surprised to find studies supporting Diagnostic Ultrasound for intra articular injuries !!

As a US orthopedic surgeon, I would be hard pressed to use an ultrasound for intra articular injuries of the knee. And I would not take a patient to the operating room based on Diagnostic Ultrasound finds of ACL or meniscal pathology.

It will be difficult to “sell” an Orthopedist on the value of Dynamic Ultrasound for evaluation of intra articular pathology in the knee
ULTRASOUND OF THE KNEE – THE FACTS

- Ultrasound has a high diagnostic value for Full Quadriceps Tendons Tears

- Ultrasound has moderate diagnostic value for Patella Tendinopathy
ULTRASOUND OF THE KNEE – THE FACTS

- Ultrasound can rule out Common Peroneal Nerve Neuropathy with high accuracy, but in less specific at ruling it in
  

- Ultrasound has moderate to high diagnostic value for Medial-Patella Plica Syndrome
  
ULTRASOUND OF THE KNEE – THE FACTS

- Ultrasound has high diagnostic value for Baker’s Cysts and Meniscal Cysts
ULTRASOUND OF THE KNEE – THE FACTS

- I was not able to find any diagnostic studies assessing the accuracy of ultrasound for detecting muscle or tendon pathology of the Hamstrings, Iliotibial Band and Gastrocnemius; Pes Anserinus Tendinobursitis, Medial Collateral Ligament (MCL), or Posterior Cruciate Ligament (PCL) injury, ganglions, Retinacula pathology or Hoffa’s Fat Pad Syndrome

- Maybe my literature searching skills are weak
ULTRASOUND AND INJECTIONS

- Ultrasound guidance notably improves injection accuracy in the target intra-articular joint space of large joints including the knee. The enhanced injection accuracy achieved with ultrasound needle guidance directly improves patient-reported clinical outcomes and cost-effectiveness.

ULTRASOUND AND REGENERATIVE MEDICINE

- Not the topic of my talk - that was close
CASE STUDY

- 45 yr old ultra distance runner (50+ miles/week) with persistent lateral knee pain
- Lateral joint line tenderness, stable exam, no effusion, questionable proximal fibular head instability
- Pain greatest with resistance to knee flexion
- MRI without contrast negative for lateral meniscus tear, lateral compartment articular cartilage injury, or LCL injury
- Dynamic Ultrasound showed ????
CASE STUDY

- 37 year old fire fighter with history of fall onto his flexed knee -> abrasions, small joint effusion
- Persistent (6months) anterior knee pain, with knee in extension
- Non tender, stable knee exam, no effusion
- MRI shows slight (?resolving) edema at the tibial tubercle
- Dynamic Ultrasound showed ???
CONCLUSIONS

- Orthopedic Surgeons are ... hmmm ...
- Dynamic Ultrasound has proven applications for intra articular and extra articular evaluation of the knee
- MRIs take static images! The knee and its anatomy function in life dynamically
- Dynamic Ultrasound increases the accuracy of intra articular injections
THANK YOU!