

## Clinical History

46 year old female presents with sudden onset of midfoot pain

The patient had recently begun a new exercise program and the pain developed while running.

She presented to an outside emergency room where radiographs were obtained and interpreted as normal (slide to follow)

After 2 days of continued pain, she presented to her podiatrist for further evaluation





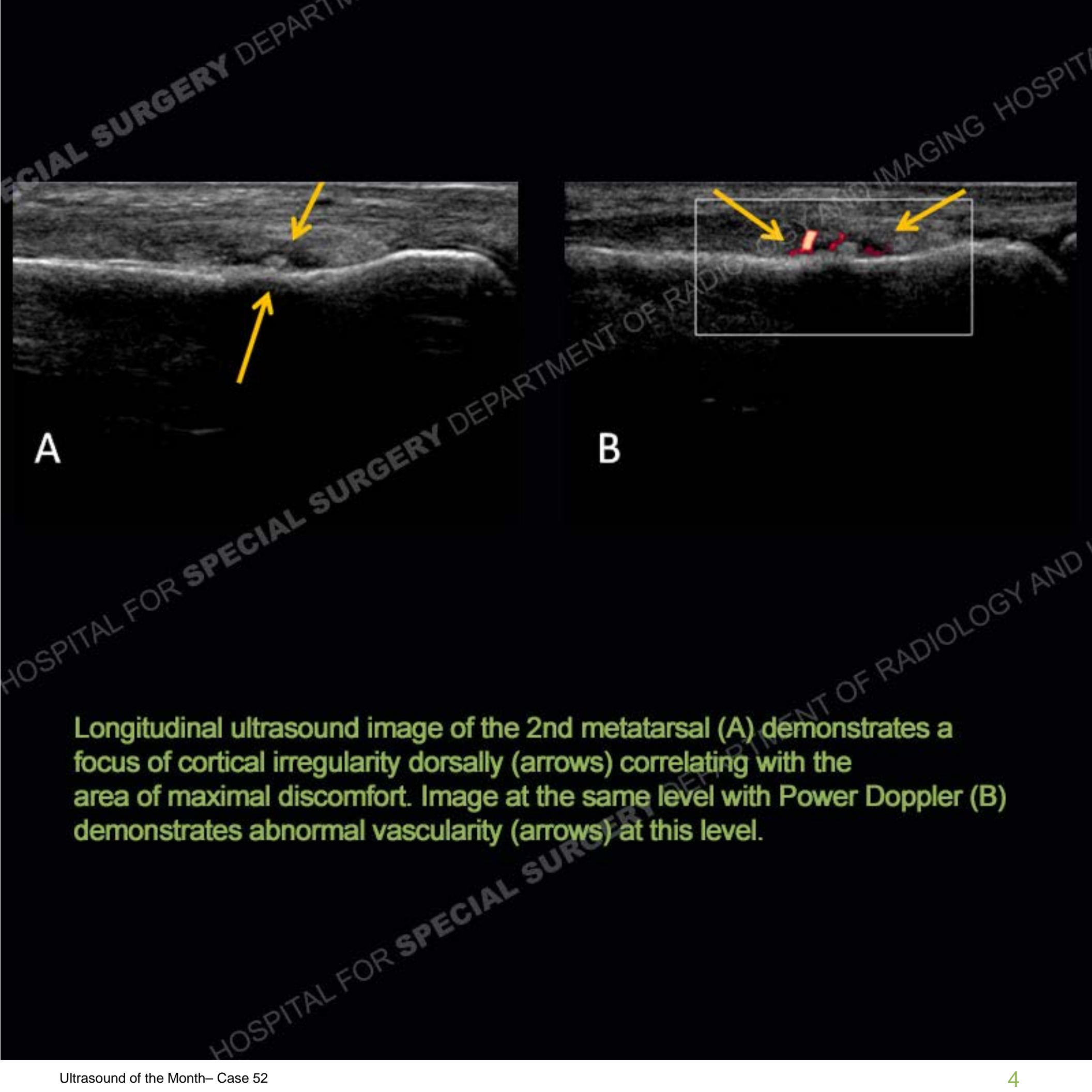
**AP and oblique foot radiographs demonstrate no evidence of fracture**

## Clinical History

The podiatrist evaluated the patient and felt that a metatarsal stress fracture was the most likely diagnosis

An ultrasound of the area of concern was requested as the patient had a contraindication for an MRI (aneurysm clips)





A

B

Longitudinal ultrasound image of the 2nd metatarsal (A) demonstrates a focus of cortical irregularity dorsally (arrows) correlating with the area of maximal discomfort. Image at the same level with Power Doppler (B) demonstrates abnormal vascularity (arrows) at this level.



Repeat radiographs 2 months later confirm cortical thickening representing healing at the site of the previously noted metatarsal stress fracture (arrows) seen by ultrasound.

Diagnosis: Metatarsal stress fracture



Another patient with a metatarsal fracture demonstrated by ultrasound.  
A: cortical fracture (arrow) on day 2 after pain developed.  
B: Repeat ultrasound 1 week later demonstrating the periosteal reaction (arrows) at the site of fracture.

A

FRACTURE

3rd metatarsal fracture

Day 2

B

FRACTURE

Periosteal reaction

Day 9

## Diagnosis: Metatarsal stress fracture

Radiographs remain the initial diagnostic study of choice in evaluating for a metatarsal fracture.

If radiographs are normal but the diagnosis is still suspected, MRI is the gold standard.

In patients who cannot have an MRI and in other selected circumstances, an ultrasound of the area may confirm the presence of a fracture. However, if the ultrasound imaging is normal, fracture cannot be excluded and further imaging and follow-up is necessary.

