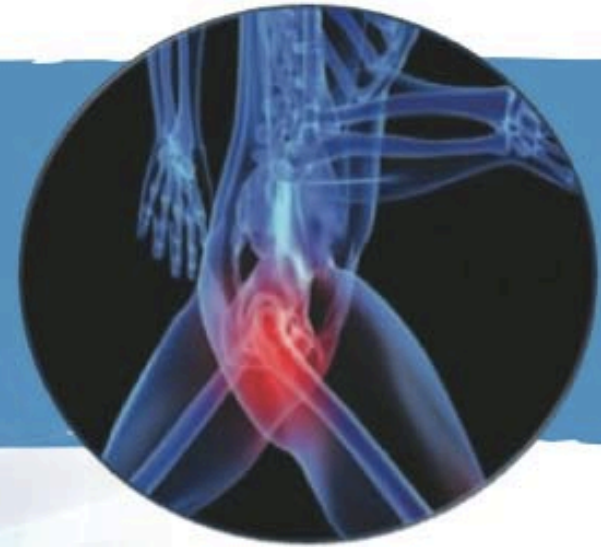


Gluteal Tendinopathy

*Implications for
Assessment & Management*



Tuesday, 8th March 2016

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Agenda

> **Background and Overview**

- Gluteal Tendinopathy/Trochanteric Bursitis
- Greater Trochanteric Pain Syndrome

> **Anatomy**

- Gluteal Muscles
- Anatomy of gluteal tendon insertions & trochanteric bursa

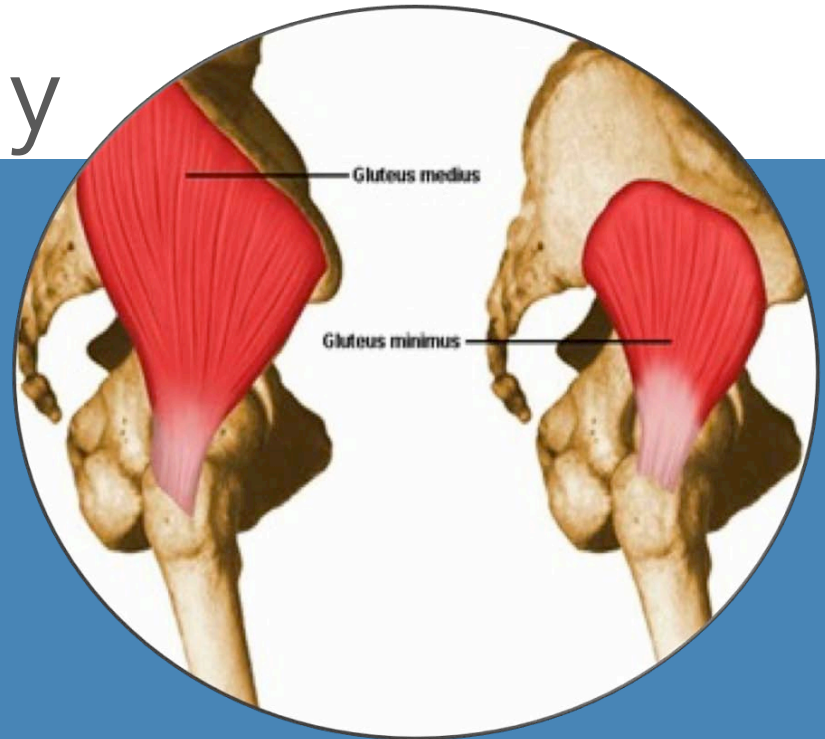
> **Diagnosis**

- Clinical
- Imaging: tendon anatomy on ultrasound, Tendon anatomy on MRI

> **Management**

Gluteal Tendinopathy

Background & Overview



Background

Gluteal Tendinopathy/Trochanteric Bursitis **Greater Trochanteric Pain Syndrome**

- > Is the most common hip tendonitis (hip tendon injury).
- > Is a source of significant pain and functional impairment
- > Can be difficult to diagnose
- > Mimics hip OA and lumbar spine referred or radicular pain (Sx overlap)
- > Effective treatment improves population health and quality of life
- > Effective treatment and investigation can have significant impact on medical costs¹

Background

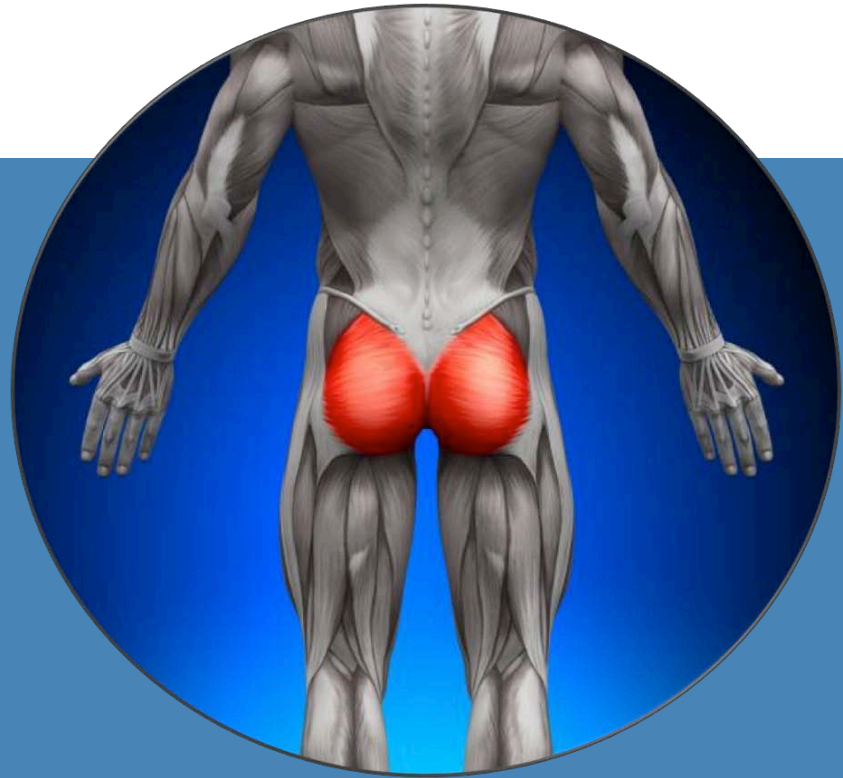
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Gluteal Tendinopathy/Trochanteric Bursitis

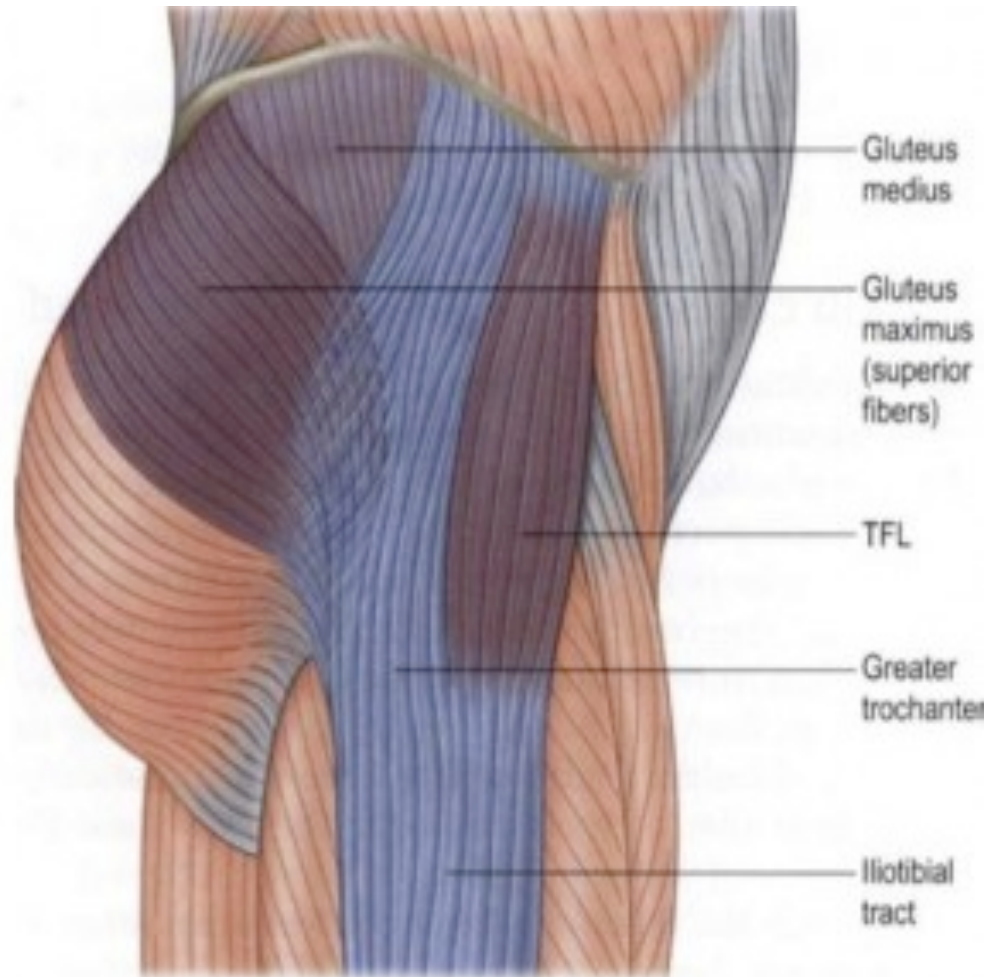
Lateral hip pain

- > Symptoms can be felt in outer groin anterior thigh
- > Pain can be felt down lateral thigh and in the lateral calf
- > Pain can be felt in the buttock
- > Women outnumber men: A lower neck shaft angle is a risk factor for, and adiposity is associated with, GTPS in women²

Anatomy of the Gluteal Muscles



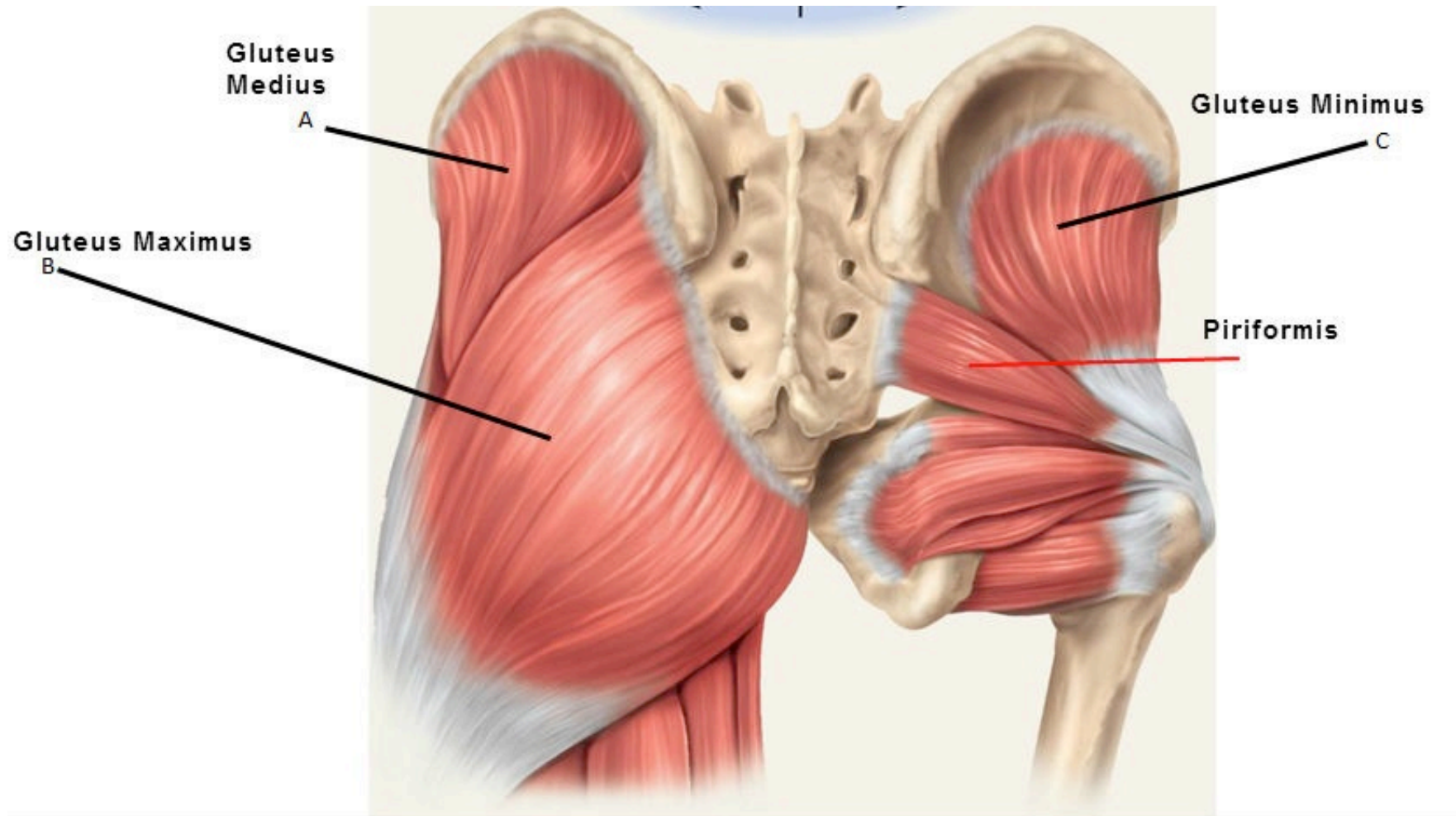
Anatomy



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Anatomy



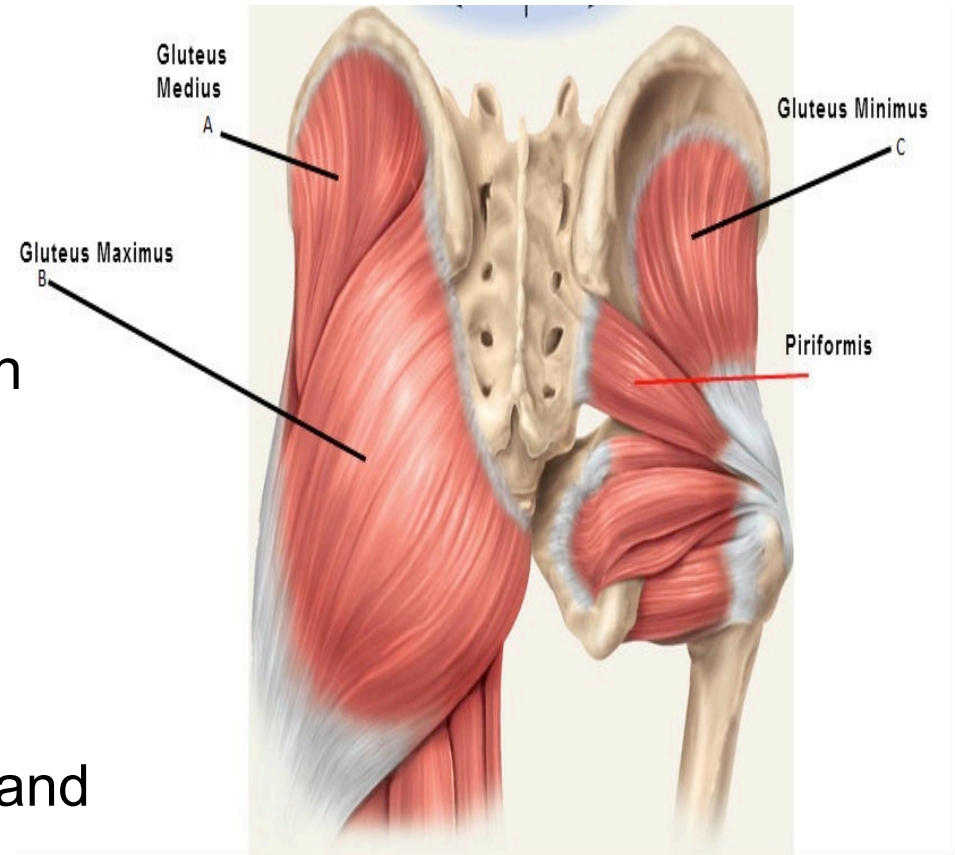
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Anatomy

Gluteus Medius

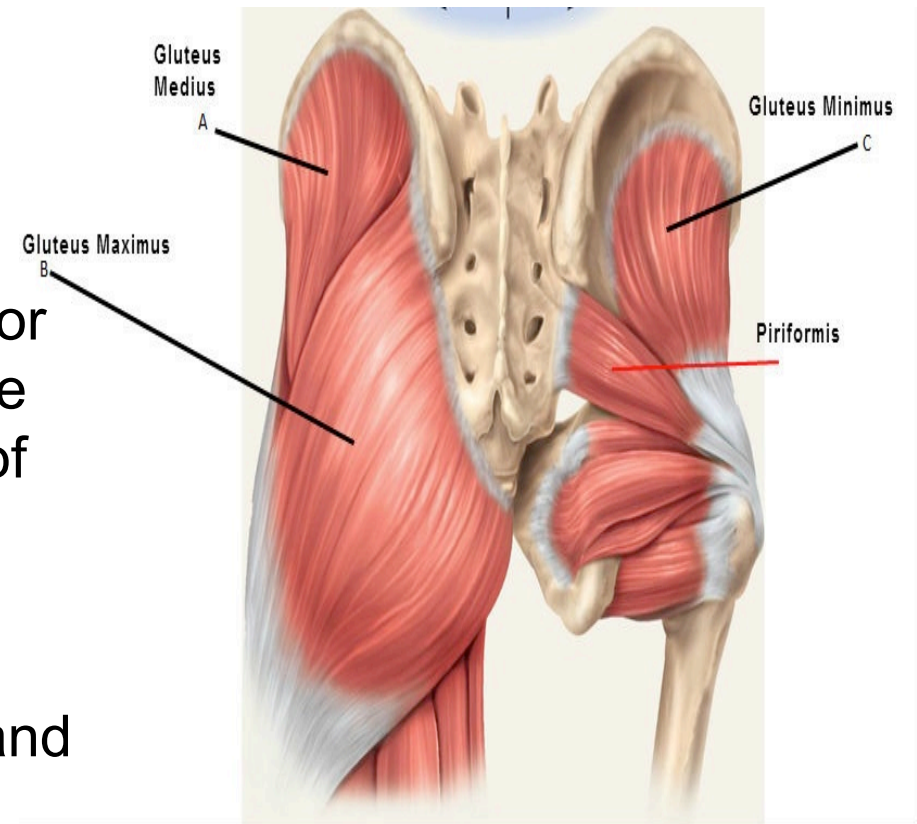
- > Lies under TFL and Maximus
- > Fan shaped
- > Arises between post gluteal line and anterior gluteal line
- > Becomes a broad tapering tendon inserting into lateral trochanter running diagonally down and forwards
- > There is an underlying bursa
- > Innervated L4,5 S1 SGN
- > Abducts the thigh in all positions and ant fibres medially rotate femur



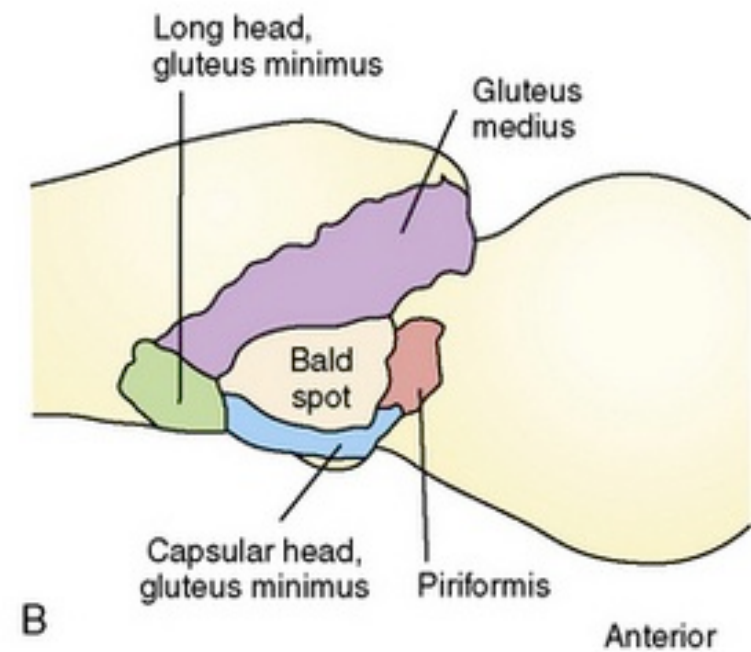
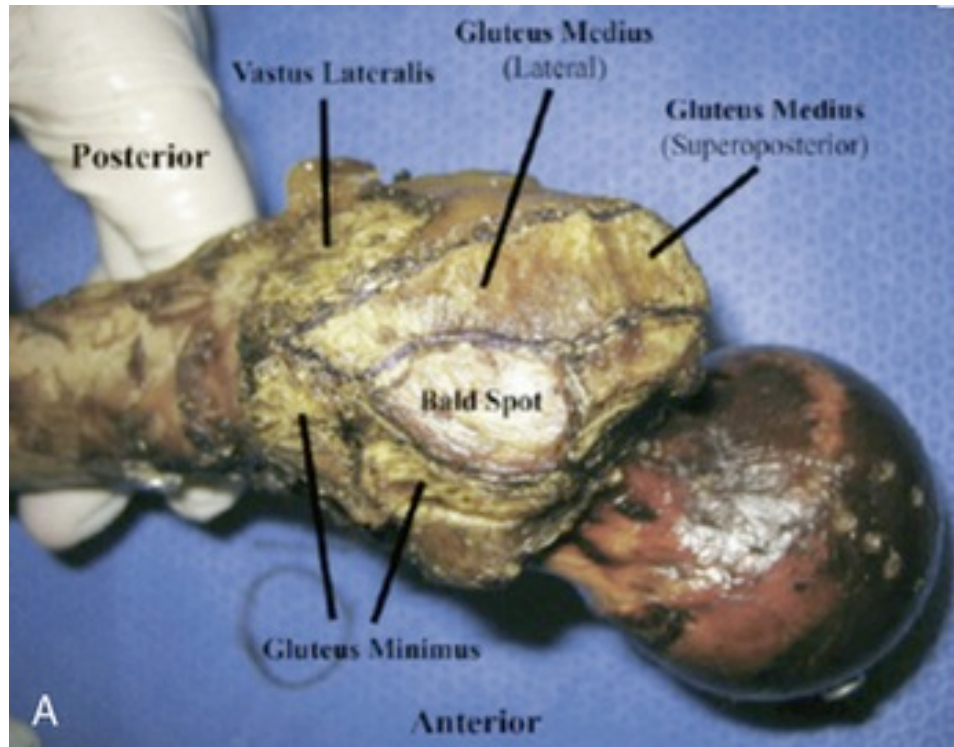
Anatomy

Gluteus Minimus

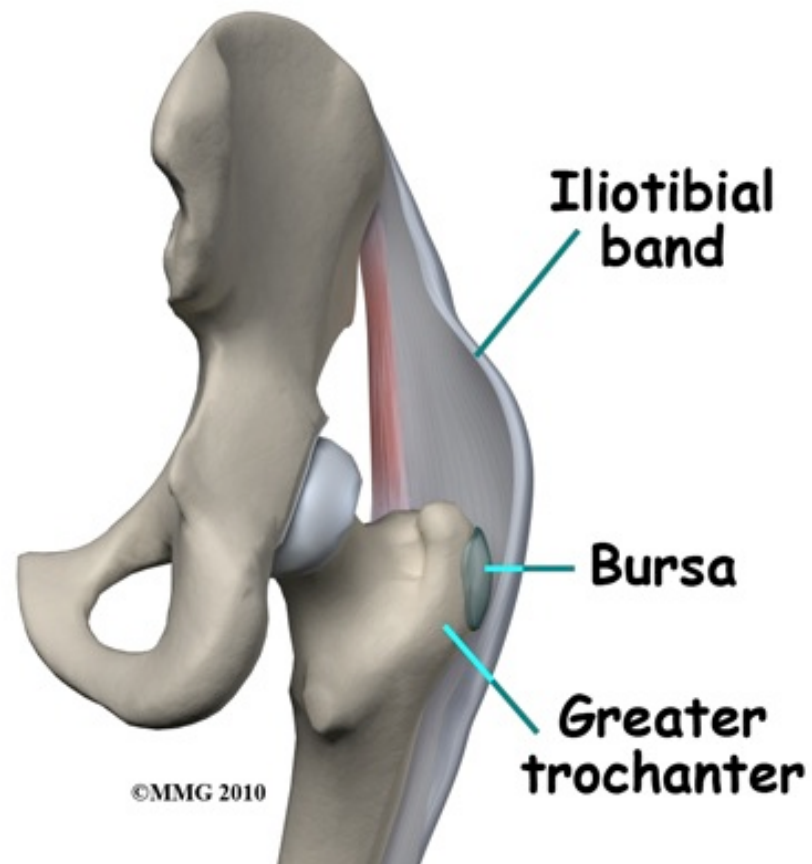
- > Lies under and antero-inferior to G. Medius.
- > Arises between anterior and inferior gluteal line and anterior gluteal line
- > Inserts into anterosuperior angle of the greater trochanter
- > There is an underlying bursa
- > Innervated L4,5 S1 SGN
- > Abducts the thigh in all positions and ant fibres medially rotate femur



Anatomy



Anatomy



Anatomy of gluteal tendon insertions & trochanteric bursa

- > Tendinopathy of the hip abductors and gluteus medius and minimus muscles is a common finding on MR imaging in patients with buttock, lateral hip, or groin pain.
- > Tendinopathy is probably a frequent cause of the *greater trochanteric pain syndrome*, a common regional pain syndrome that can mimic other important conditions causing hip pain including avascular necrosis and stress fracture.



Gluteal Insertions

- > The gluteal muscle has both an upper portion and a lower deep portion:
 - The upper part of the muscle, along with the more superficial fibers of the lower part, end in a thick flat tendon that passes lateral to the greater trochanter and attaches to the iliotibial band of the fascia lata.
 - A bursa is usually found between the greater trochanter and the muscle-tendon unit.
- > The deeper fibers of the lower part of the muscle attach to the gluteal tuberosity, a raised portion of the bone between the attachments of vastus lateralis and adductor magnus.

Diagnosis:

Clinical



Diagnosis - Clinical

History

- > Local pain with activity, initially on initiation with warm up
- > Progresses to constant
- > Difficulty with stairs and inclines
- > Side lying pain
- > Night pain
- > Can mimic hip OA and Lumbar spine

Diagnosis - clinical

Examination

- > Spine and hip range of motion
- > Palpation (most sensitive but least specific)
- > No tenderness even in MRI diagnosed tendinopathy is unlikely to have clinical tendinopathy

Diagnosis - clinical

Examination

Tests

- > FADER = Flexion/Adduction/External Rotation (ER)
- > FADER-R = Flexion/Adduction/ER-Resisted
- > FABER = Flexion/Abduction/ER
- > ADD= End Of Range side lying adduction
- > ADDR =End Of Range side lying adduction resisted abduction
- > Palp

Diagnosis - clinical

Examination

Abstract 66 Table 1

Diagnostic utility indicators for clinical tests versus MRI diagnosis of GT

	Sens	Spec	PPV	NPV
CDGT	0.67	0.71	0.89	0.4
FADER	0.33	0.79	0.83	0.26
FADER-R	0.48	0.86	0.92	0.33
FABER	0.46	0.79	0.88	0.31
ADD	0.22	0.79	0.83	0.23
ADDR	0.41	0.93	0.95	0.32
PALP	0.83	0.43	0.83	0.43

Diagnosis:

*Diagnostic
Imaging*



Diagnosis - Imaging

Plain Xray

Tells you a lot without much effort

- > OA
- > Tumour
- > Calcification

Ultrasound- if unsure/patient wants a test/readily available

Get an Xray if you are getting an ultrasound

MRI- younger patients when Xray etc NAD but worried about hip.

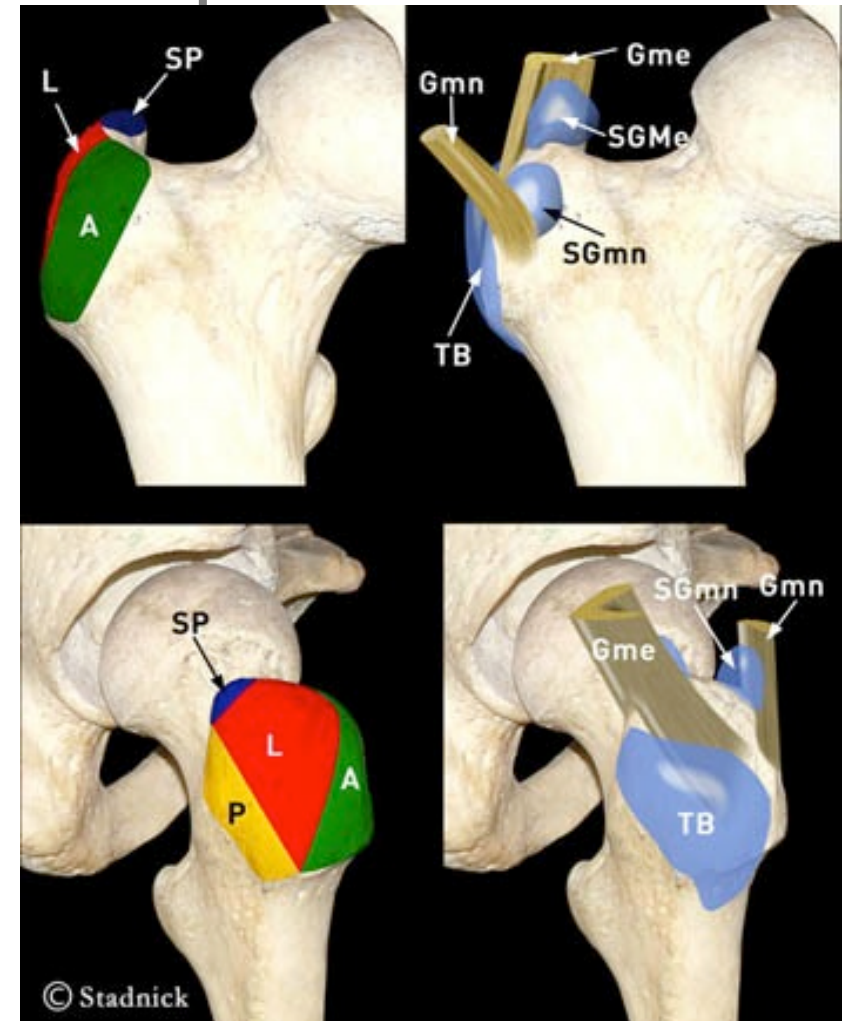
-red flags

Anatomy of gluteal insertions and trochanteric bursa

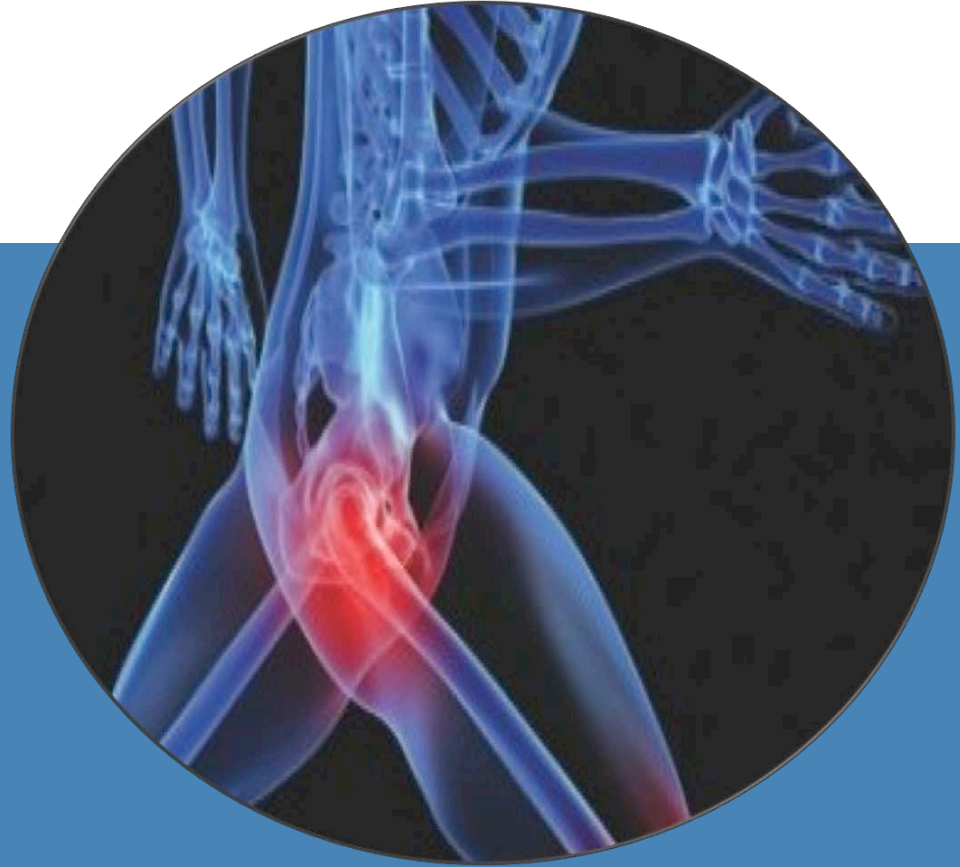


"Rotator Cuff of the Hip"

- > Greater trochanter surface composed of 4 facets:
 - anterior
 - lateral
 - posterior
 - posterosuperior
- > Gluteus minimus inserts onto the anterior facet
- > Gluteus medius inserts onto lateral and posterior/posterosuperior facets
- > Although variable, three distinct bursae including trochanteric.



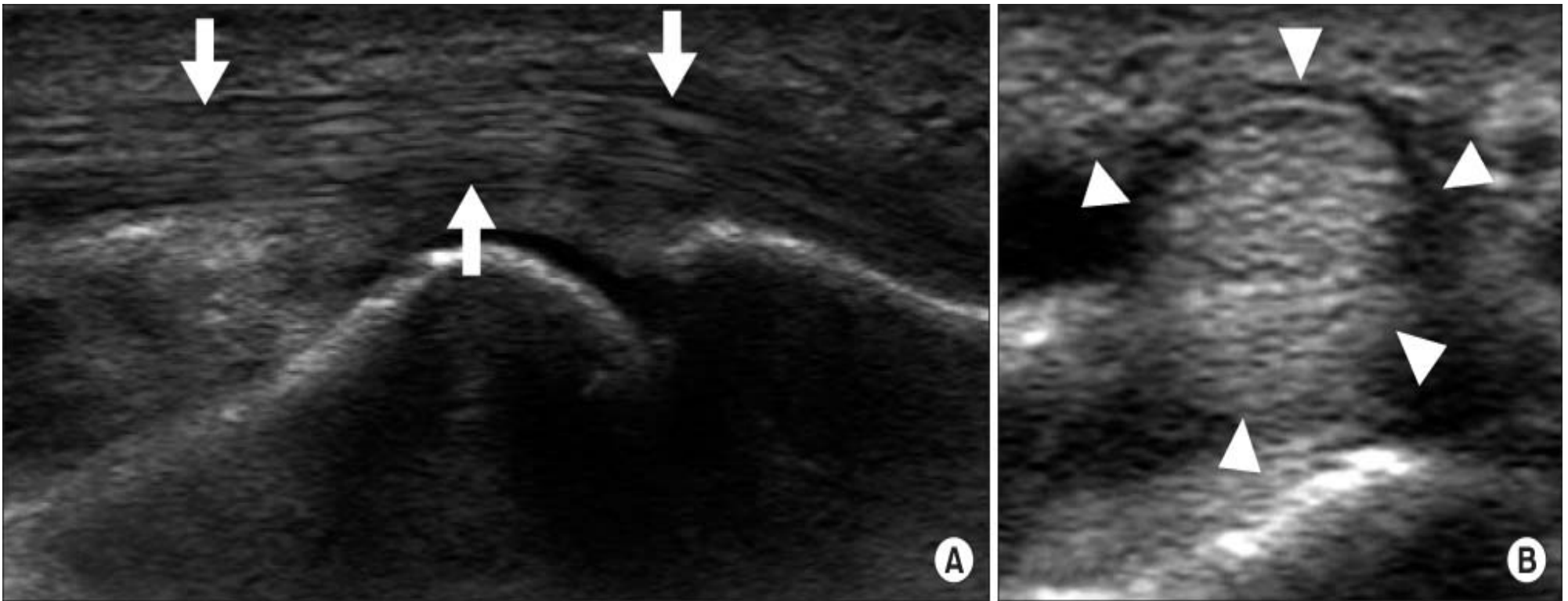
Tendon anatomy on ultrasound



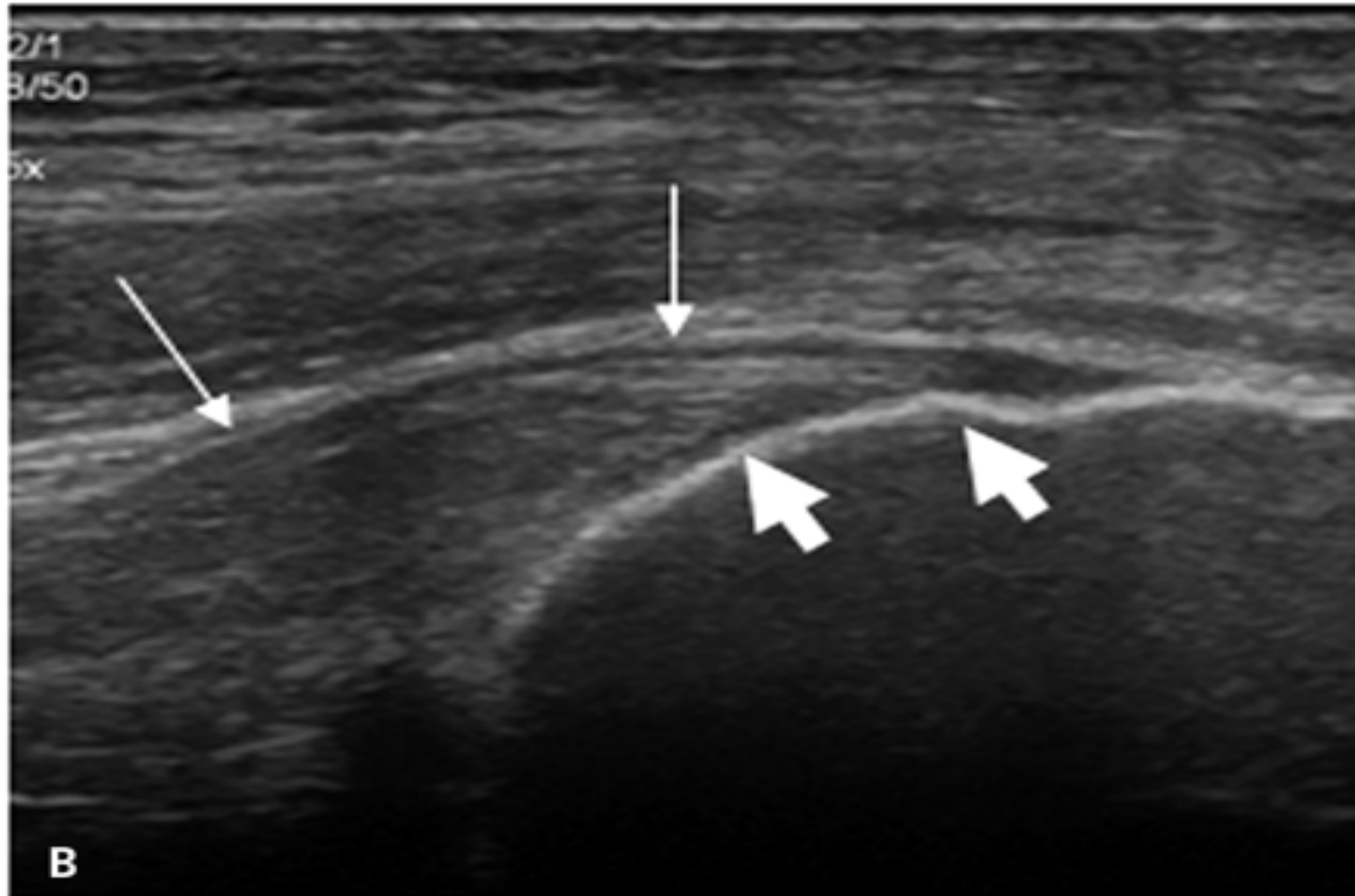
Normal tendon anatomy on ultrasound

- > Use of linear high frequency transducers
- > - optimised based on patient body habitus and depth of tendon examined.
- > U/S evaluation of normal tendons along their long axis shows an internal network made up of very fine tightly packed linear “echoes” that resemble a fibrillar pattern.
- > On short axis, u/s demonstrates normal tendon echotexture made up of bright stippled clustered dots.

Normal tendon anatomy on ultrasound



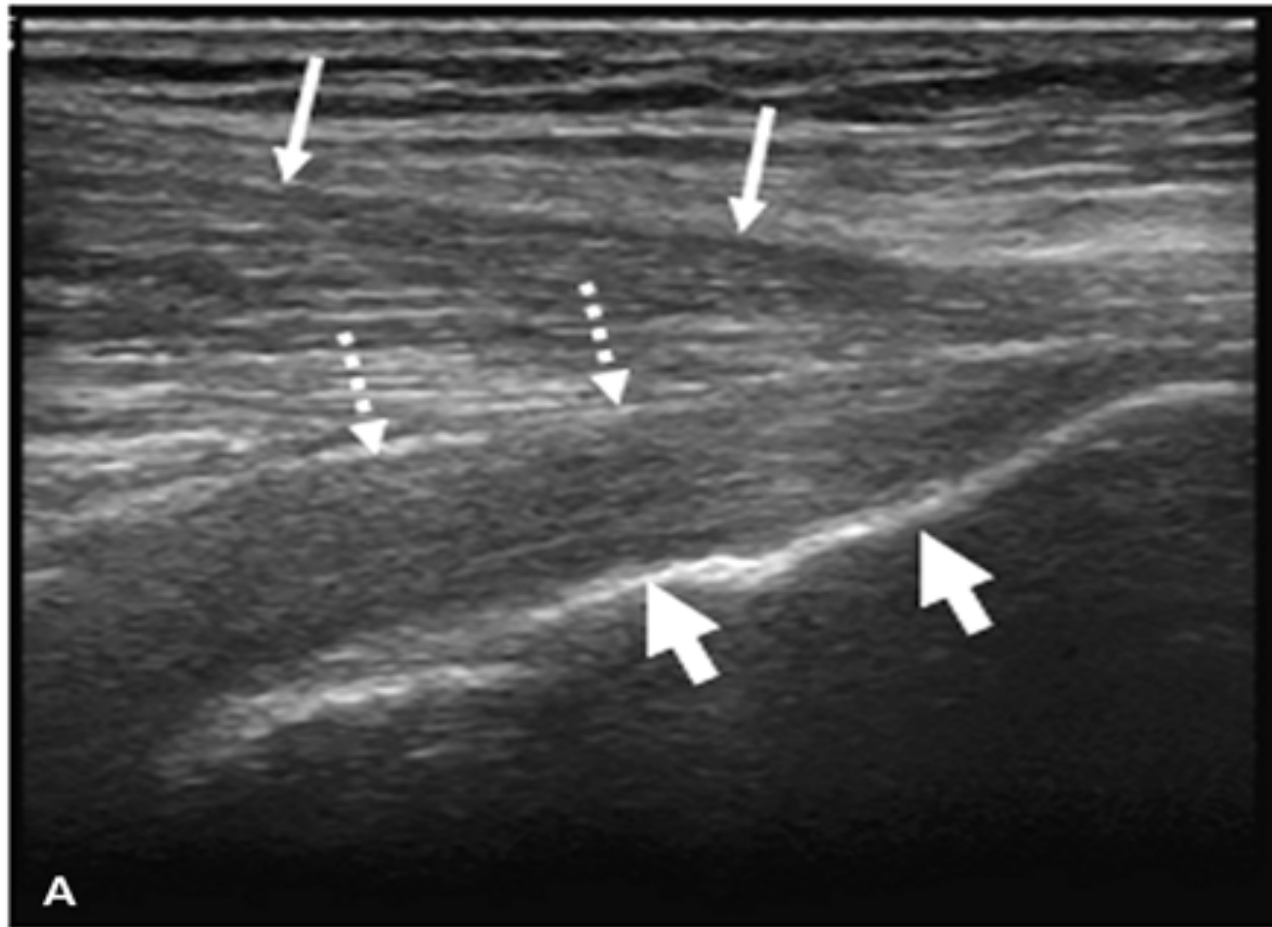
Normal tendon anatomy on ultrasound



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Normal tendon anatomy on ultrasound



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Tendon changes on ultrasound

Tendinosis:

- Tendons are characterised by a degenerative non-inflammatory process.
- Not “tendinitis.”
- Focal (nodular) or diffuse tendon thickening, and intratendinous hypoechoic areas with loss of fibrillar echoes
- Hypervascular (neovessels)



Tendon changes on ultrasound

Partial tear:

- > Often a difficult diagnosis as there is a spectrum from degeneration to microtears to interstitial tears.
- > With progress in u/s, interstitial tears can be identified in areas of tendon degeneration as thin hypoechoic clefts oriented along the long axis of tendon and possibly reaching tendon surface,
- > Contour irregularity/focal thinning.
- > Treatment significance?



Tendon changes on ultrasound

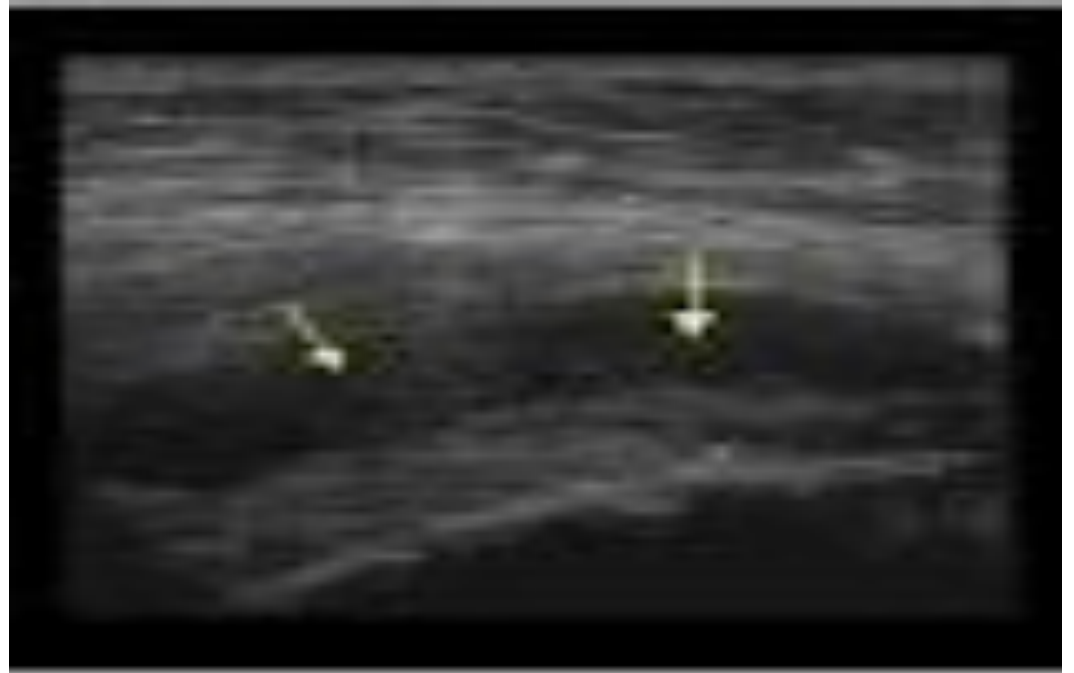
Complete tear:

- > Focal defect created by a variable degree of retraction of the torn tendon ends.
- > Defect created by the tear is usually filled with anechoic or hypoechoic fluid from local haematoma.
- > In subacute or chronic tears, there is a lack of fluid.

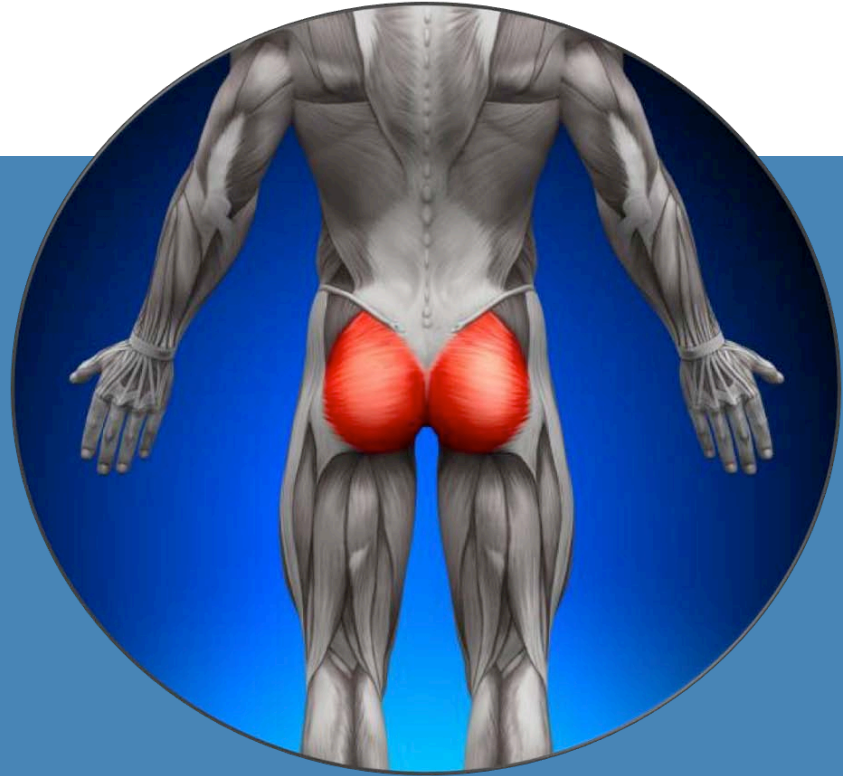


Trochanteric Bursitis

- > Bursal fluid not normally seen
- > Fluid distension of the bursa appears as a well-circumscribed crescentic shaped hypo- to anechoic collection located superficially to the posterior insertion of gluteus medius and lateral aspect of the greater trochanter, and deep to gluteus maximus.



Tendon anatomy on MRI



Normal tendons on MRI

- > On all conventional pulse sequences, normal tendons should be seen as homogenously low signal intensity.
- > The densely arranged and highly organized microstructure of tendons is thought to restrict the rotational motion of water, accounting for the uniformly low signal intensity on conventional MRI.

Tendon changes on MRI

Tendinosis

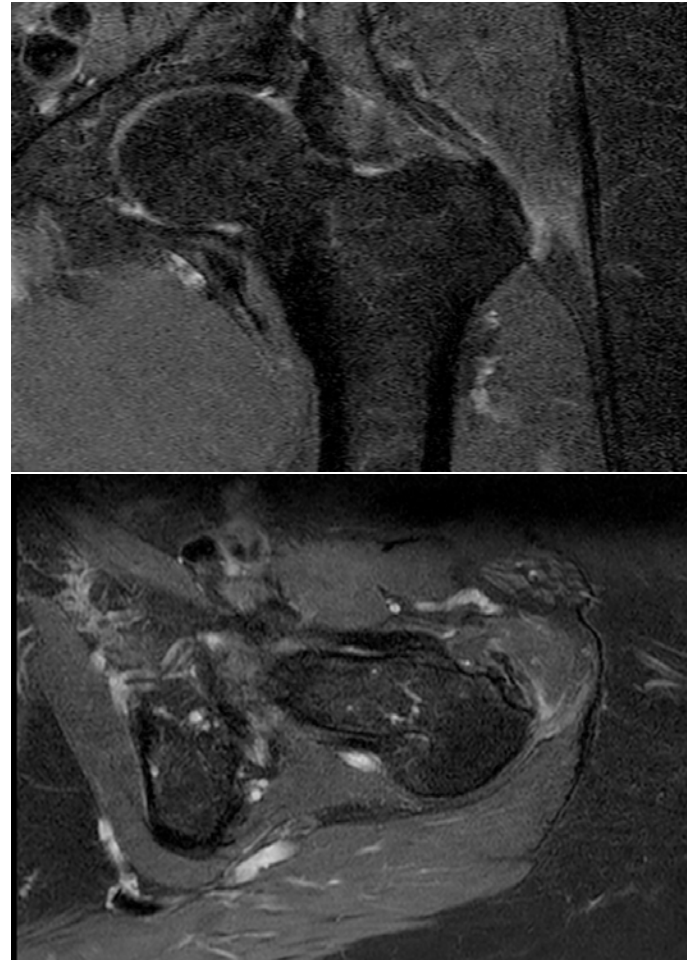
- > On MRI, the degenerated tendon may be thickened and may have signal heterogeneity, instead of the usual low signal intensity
- > Grading of mild, moderate and severe is somewhat subjective.



Tendon changes on MRI

Partial Tear

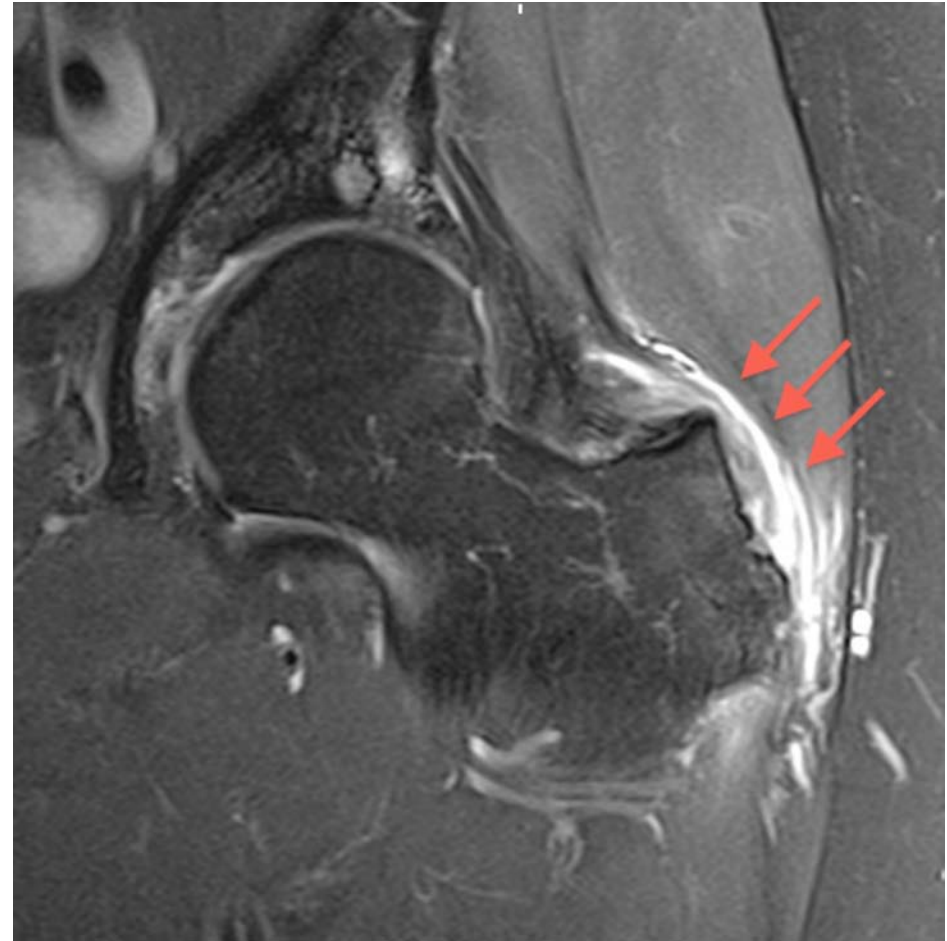
- > Continued repetitive tensile stress and micro-tearing can lead to macro-tear of the tendon, which may be purely interstitial or may involve the tendon surface.
- > Fibre thinning and discontinuity.



Tendon changes on MRI

Complete Tear

- > Tendon ruptures are characterized on as discontinuity of the tendon fibers, with or without retraction and resultant tendon gap (can be filled with fluid, fat or scar tissue).
- > Ruptured tendon ends are usually thickened and heterogenous as a result of underlying degeneration



Ultrasound versus MRI

Ultrasound

- > cheap, accessible and safe.
- > Allows dynamic imaging and “clinical consult”
- > Dependent on patient body habitus and tendon depth.
- > Operator dependent.

MRI

- > Lengthier examination
- > More sensitive for larger BMI patients
- > Larger field of view results in a global visualisation of the hip/pelvis for assessment of mimics (such as joint derangement).

Management



Management

- > Assess degree of pain, functional limitation and night pain
 - > Medication- NSAID/Paracetamol/Endep
 - > Injection- Steroid (get patient to keep a pain chart)
 - > Guided or unguided up to you, confidence, patient size
 - > I use Celestone Cronodose/Spinal Needle/LA short acting
-
- > If pain is not bad and sleep disturbance not severe, to a physio
 - > Physios are working out well researched strategies for managing tendinopathy with exercise
 - > Isometric holds
 - > Progress to more functional exercises and activity

Management

- > Be reassuring
- > Tendinopathy is slow to get better: patience and diligence
- > Main thing is to not over treat and muck up natural history
- > PRP no evidence but limited RCTs
- > Tenocytes/Stem Cells **No!**
- > Think about alternate exercise, weight loss as part of the holistic strategy
- > Once physios have got them better to the EP

References

BJSM is the journal of choice

1. Fearon et al BJSM 2013;47:649-653
2. Grimaldi et al BJSM 2014: 48(Supp):A1-A76
3. Fearon et al BJSM 2012: 46:888-892