

Greater Trochanteric Pain Syndrome: Diagnosis Percutaneous Treatment

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Syllabus PDF

1

Disclosures

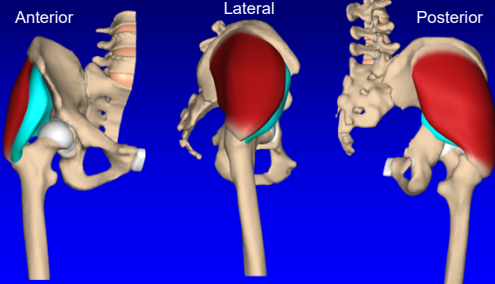
- Consultant: Bioclinica
- Advisory Board: Philips
- Book Royalties: Elsevier
- Not relevant to this lecture

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Fundamentals of Musculoskeletal Ultrasound are
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2

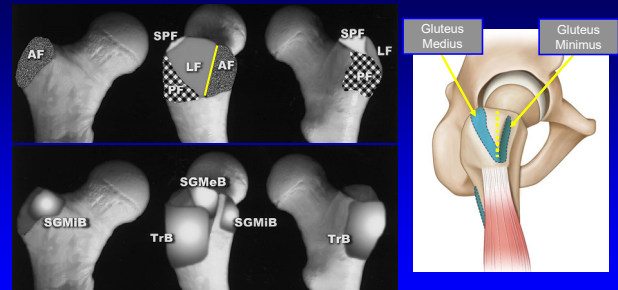
Greater Trochanter: gluteal tendons



Gluteus medius (red) Gluteus minimus (blue)

3

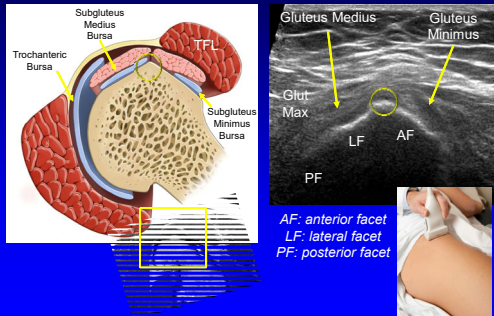
Greater Trochanter



FACETS: AF = anterior, LF = lateral, SPF = superoposterior, PF = posterior
Pfirrmann et al. Radiology 2001; 221:469

4

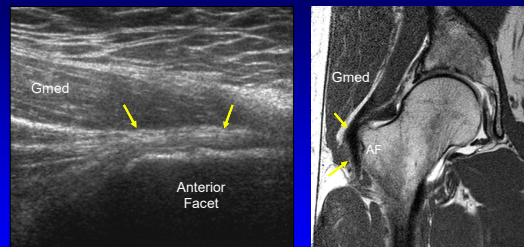
Greater Trochanter



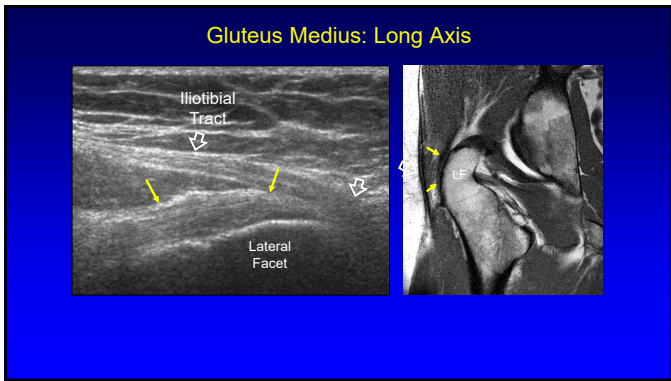
AF: anterior facet
LF: lateral facet
PF: posterior facet

5

Gluteus Minimius: Long Axis



6



7

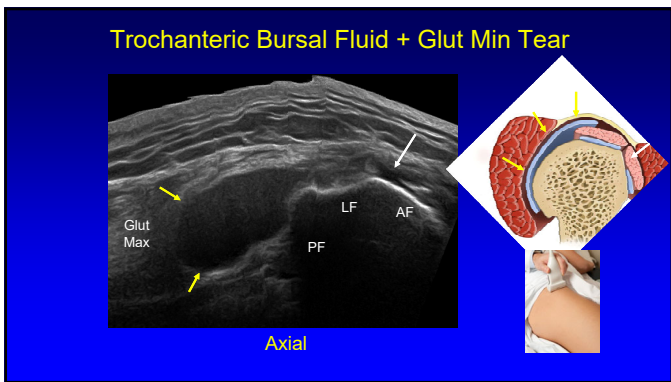
Trochanteric Pain Syndrome:

- Most commonly caused by gluteus minimus and medius tendon abnormalities¹
- Trochanteric bursitis: uncommon
 - 20% of symptomatic patients²
 - Not actually inflamed³
 - Not associated with pain⁴

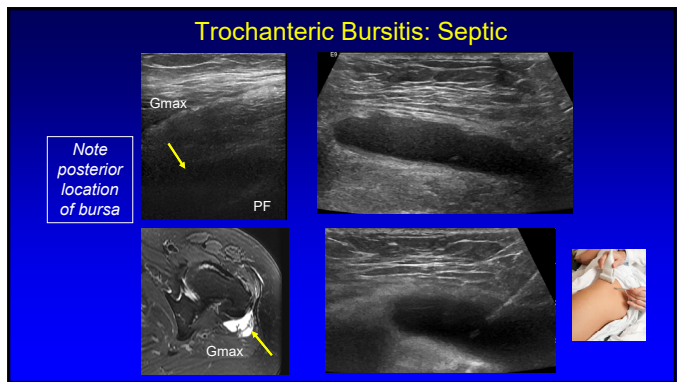
IT'S NOT BURSTITIS

¹Kong A et al. Eur Rad 2007; 17:1772
²Long SS et al. AJR 2013; 201:1083
³Sylva F et al. Clin Rheumatol 2008; 14:82
⁴Blankenbaker DG et al. Skeletal Radiol 2008; 37:903

8



9



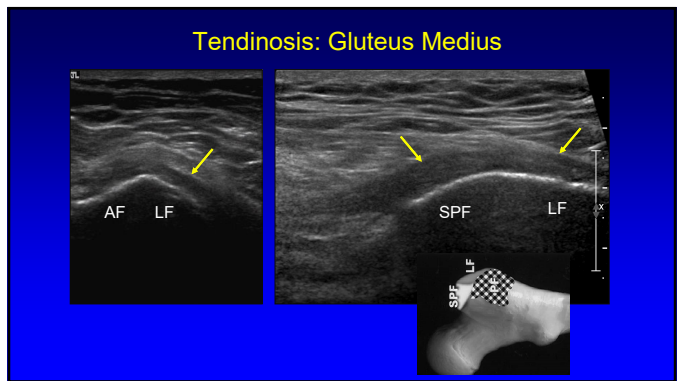
10

Gluteal Tendon Pathology:

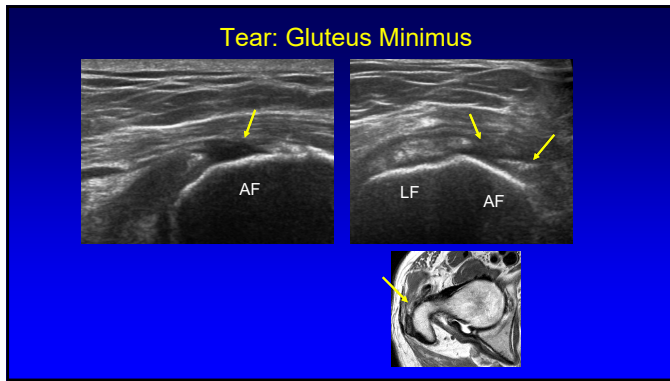
- Tendinosis: hypoechoic, no defects
- Partial tear: anechoic clefts
- Complete tear: discontinuous tendon
- >2 mm cortical irregularity (depth)
 - Associated with tendon tear
 - Positive predictive value = 90% (xray)*

*Steinert et al. Radiology 2010; 257:754

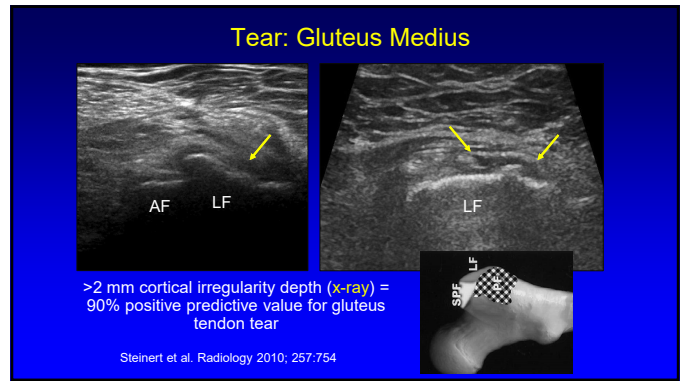
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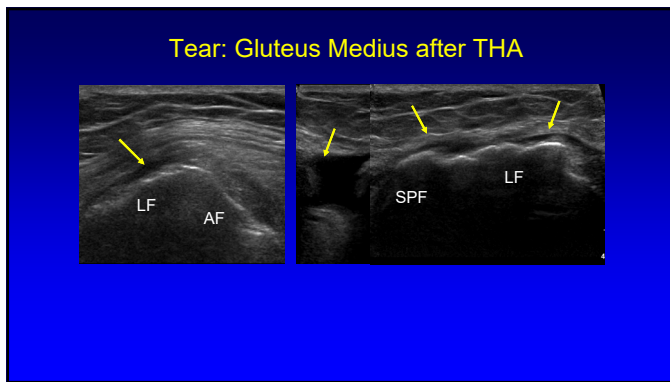
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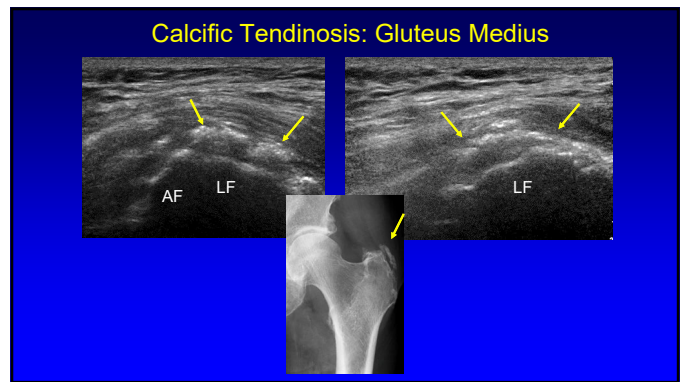
13



14



15



16

Potential Treatment Algorithm:

- If bursa: aspirate, inject steroids
- If calcific tendinitis: lavage and aspirate
- If tendinitis:
 - Inject steroids superficial to tendon
 - 72% of patients significantly improved (short term)¹
 - Tenotomy or fenestration
- If tendon tear: platelet-rich plasma injection?

¹Labrosse, et al. 2010 AJR 2010; 194:202

17

Percutaneous Tendon Treatments

- Corticosteroid
- Fenestration (dry needling, tenotomy)
- Hyperosmolar dextrose, prolotherapy
- Whole blood (autologous)
- Platelet-rich plasma
- Stem cells
- Other: deer antler velvet, amniotic membrane

Lopez-Vidriero et al. Am J Sports Med 2010; 26:269

18

Peritendon Steroid Injections

- Shoulder: minimal transient pain relief¹
- Elbow: common extensor tendon
 - Pain returns worse than before injection²
- Gluteal:
 - 72% showed improvement at 1 month³
- Hamstring:
 - 24% had symptom relief beyond 6 months⁴

¹Mohamadi A et al. Clin Orthop Relat Res 2017; 475:232

²Coombes BK et al. JAMA 2013; 309:461

³Labrosse JM et al. AJR 2010; 194:202

⁴Zissen MH et al. AJR 2010; 195:993

19

Tendon Fenestration

- Also called “dry-needling” or tenotomy
- Needle repeatedly passed through areas of tendinosis
- Disrupts area of tendinosis
- Bleeding causes release of growth factors
- Stimulates tendon healing

20

Fenestration: technique

- No NSAIDS x 2 weeks prior
- Ultrasound guidance: in plane
 - Long axis to tendon
- 20 or 22 gauge needle
- 20 – 30 passes until area soft
- Minimal Lidocaine: over tendon



21

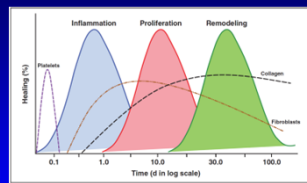
Fenestration: technique

- Cover entire tendon abnormality
- Contact bone if at tendon abnormality
- Pull needle out of tendon to redirect
- Also redirect medial to lateral
 - Pivoting at needle entrance
 - Cone-shaped area

22

Tendon: healing

- Inflammatory phase
 - First week after injury
 - Fibrin clot
 - Cell migration, neovascularity
- Proliferation phase
 - 1 to 4 weeks
 - Fibroblasts synthesize collagen and extracellular proteins
- Remodeling phase



Galloway MT et al. JBJS 2013; 95:1620
Lee KS, et al. Am J Roentgenol 2011; 196:628

23

Fenestration: technique

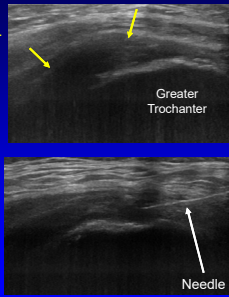
- Contraindications:
 - Not delineated in literature
 - Prior steroid injection < 3 months ago
 - Bleeding disorders
 - Infection
 - Tendon tear > 50% thickness?

24

Gluteus Maximus and Minimus

- Randomized controlled: 30 patients
 - PRP versus fenestration alone
 - Significant improvement at weeks 1 and 2
 - 80%: long term improvement 1 year follow-up
 - No difference between treatment groups¹
- Two PRP injections: sustained response²
- Improvement shown at 22 months³

¹Jacobson JA et al. J Ultrasound Med 2016; 35:2413
²Fitzpatrick J et al. Am J Sports Med 2019; 47:1130
³Baker C et al. Ortho J Sports Med 2020; 8



25

Thank you!



Syllabus on line and other educational material:
www.jacobsonmskus.com

Twitter handle: @jjacobsn



26