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Redefining Biological Healing across Tendon Pathologies in the Shoulder, Hip & Ankle

Gluteus Tears of the Hip

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Innovation Theater AAOS 2023

Disclosures

- Consultant: Smith & Nephew

- Editorial Board:
  - American Journal of Sports Medicine
  - Journal of Arthroscopy and Related Research
  - Video Journal of Sports Medicine

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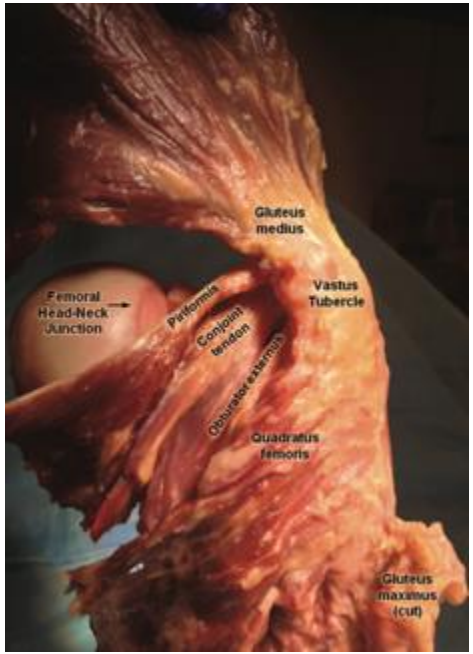
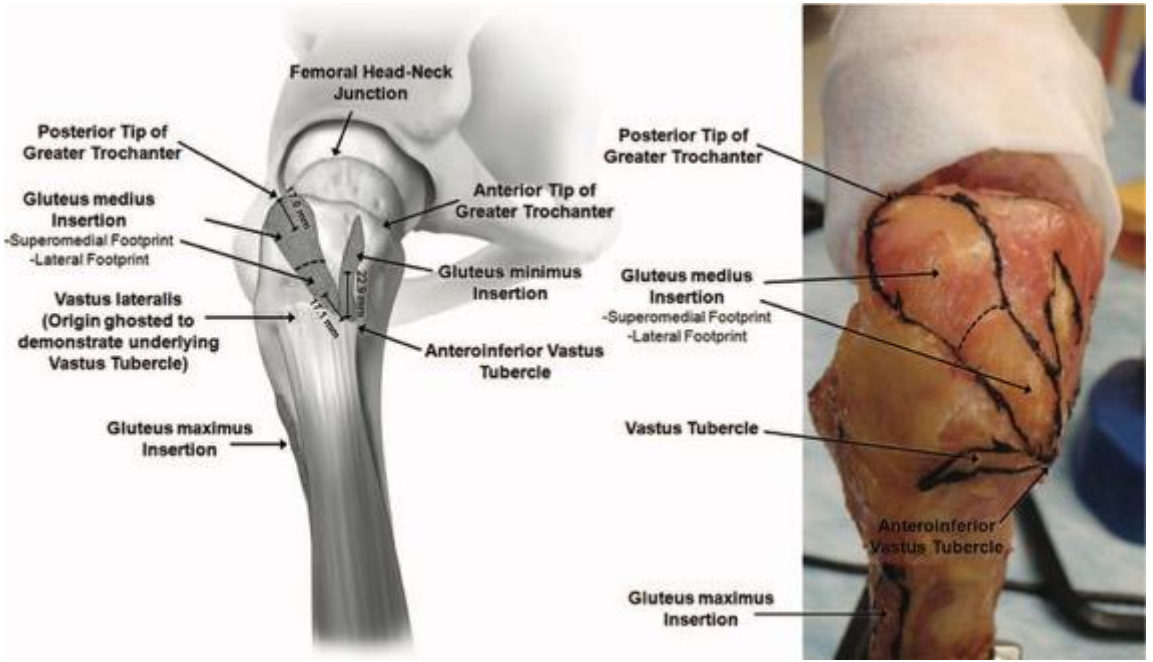
Surgically Relevant Bony and Soft Tissue Anatomy of the Proximal Femur

Marc J. Philippon,*†‡ MD, Max P. Michalski,† MSc, Kevin J. Campbell,† BS, Mary T. Goldsmith,† MSc, Brian M. Devitt,† MD, Coen A. Wijdicks,† PhD, and Robert F. LaPrade,†‡ MD, PhD





Orthopaedic Journal of Sports Medicine

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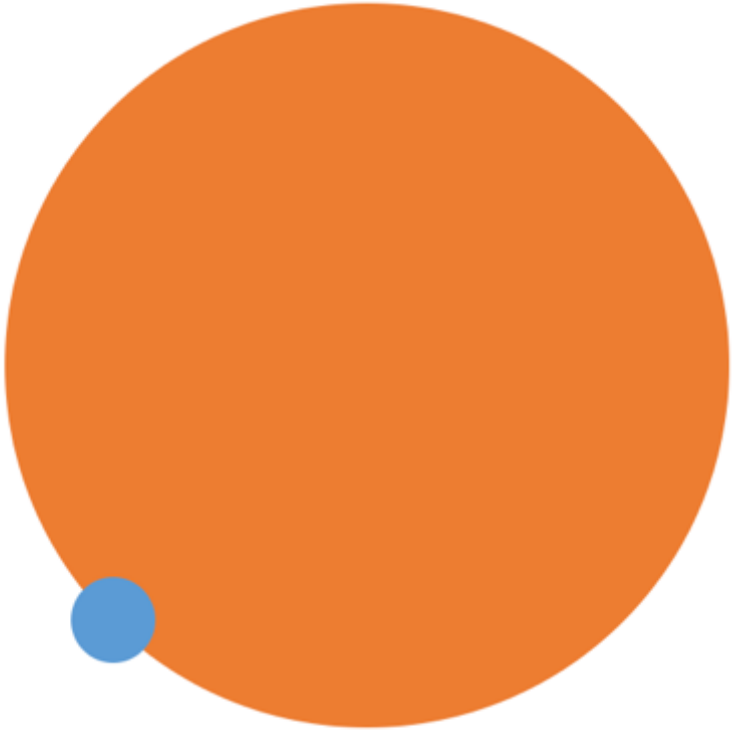
Case: The Model Walk



- 52F with intermittent lateral hip pain
- Friends notice a “limp”
- No trauma

- Occasional pain when sleeping on that side
- Most painful with prolonged walking and stairs

- No radicular symptoms, contralateral symptoms
- No groin pain

Tried PT, oral and topical NSAIDs, rest, activity modification

Never injections

Physical Exam

Negative	Log roll FADIR/FABER Resisted adduction, resisted sit-up, resisted hip flexion, SLR
Positive	Tenderness along GT Abductor weakness with pain Trendelenberg gait/sign

Greater Trochanteric Pain Syndrome (GTPS)

- Most common lower extremity tendinopathy in adults
- Affects up to 24% of women 50+

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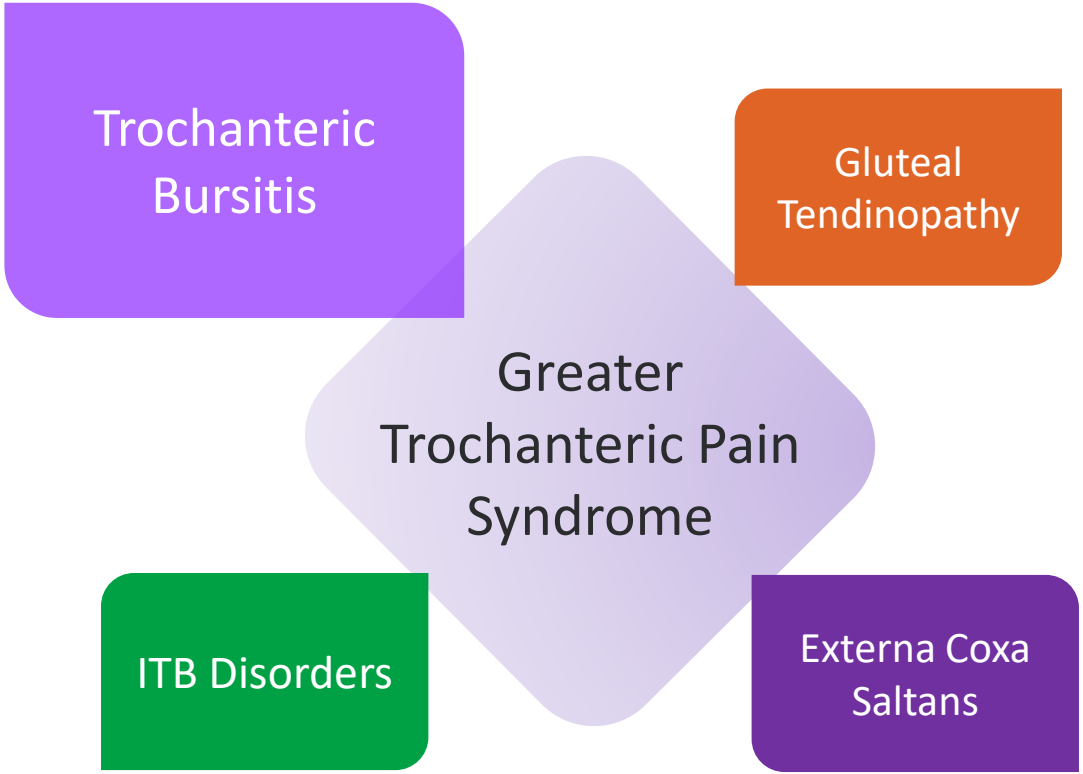
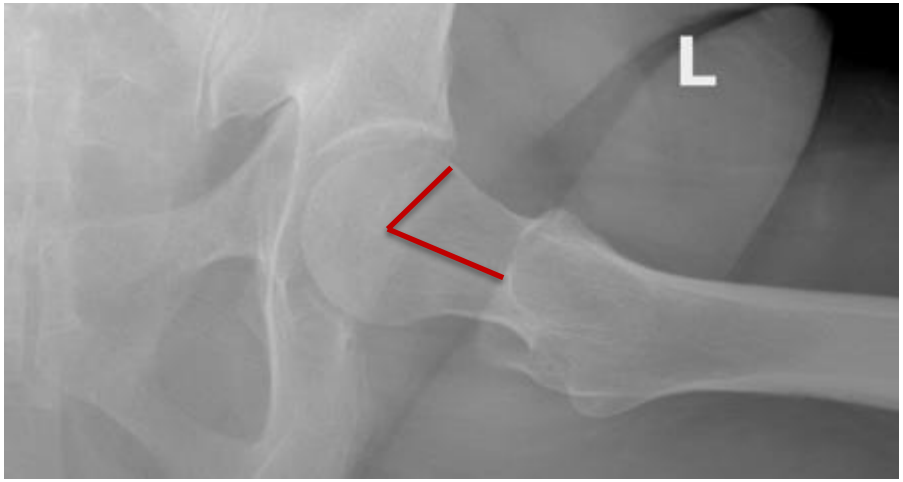

Trochanteric Bursitis
Gluteal Tendinopathy
Greater Trochanteric Pain Syndrome
ITB Disorders
Externa Coxa Saltans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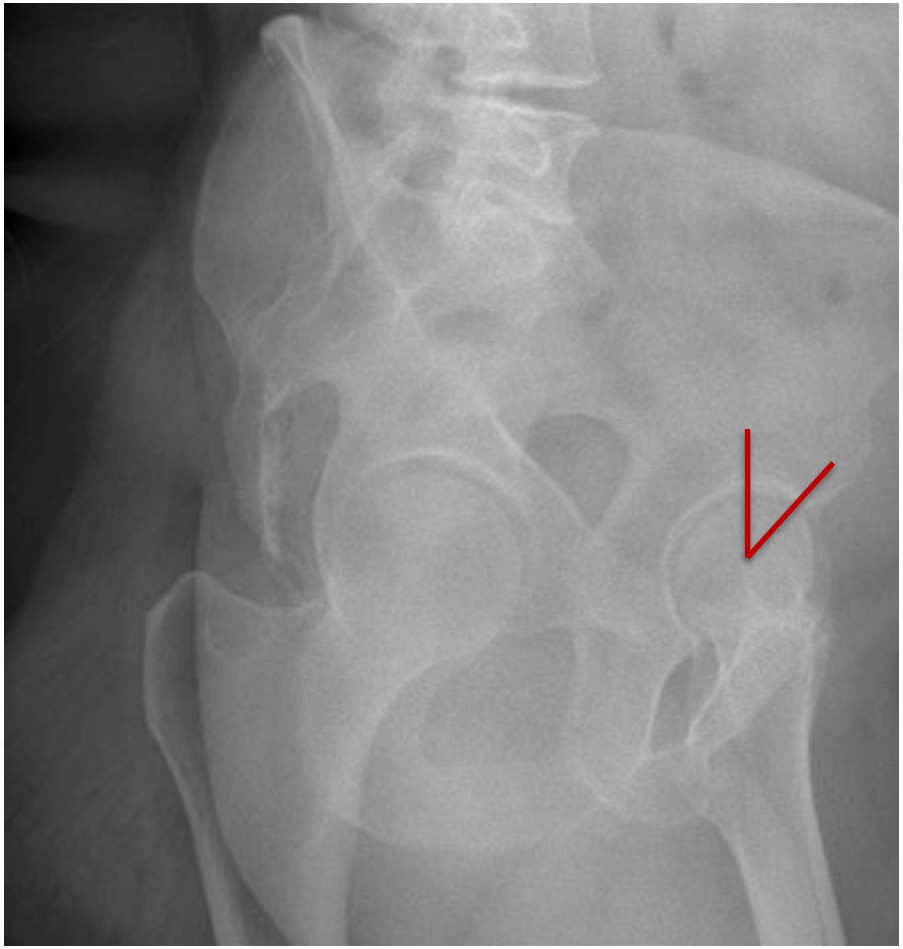
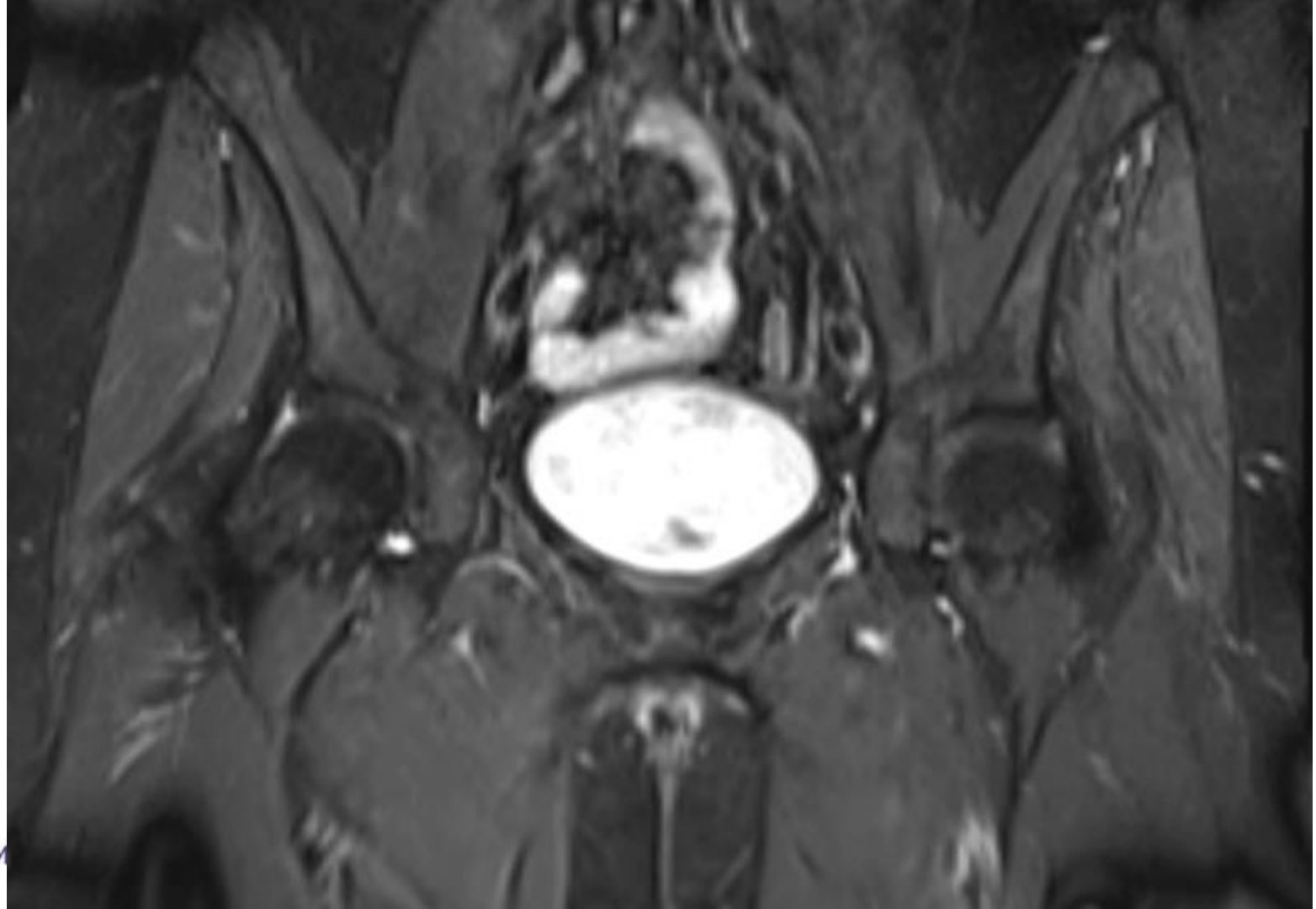
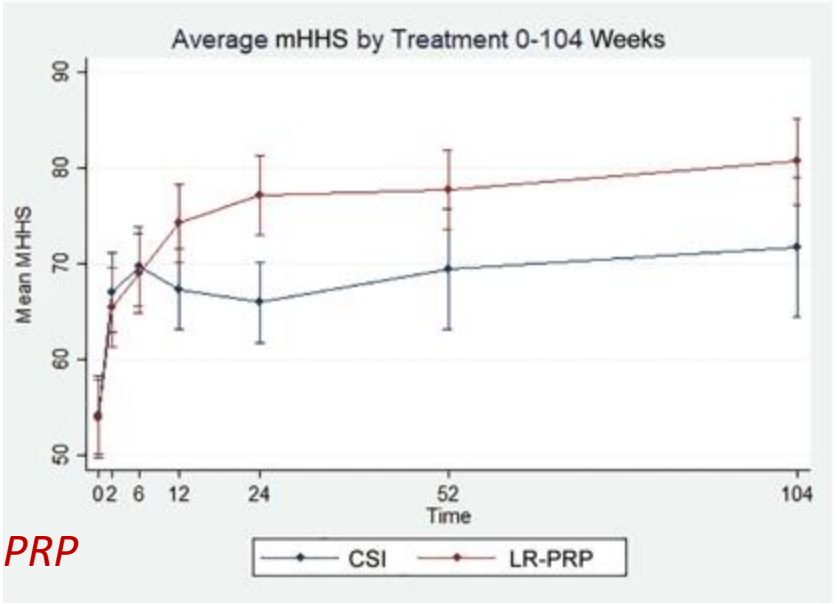




Management Plan

Leucocyte-Rich Platelet-Rich Plasma Treatment of Gluteus Medius and Minimus Tendinopathy: A Double-Blind Randomized Controlled Trial With 2-Year Follow-up

- 80 pts, chronic gluteal tendinopathy >15months
- LR-PRP vs. CSI under U/S
- Age ~60yrs, 9:1 women:men
- No full thickness tears



Sustained mHHS improvement after 2yrs with PRP

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Fitzpatrick et. al, AJSM 2019

Comparative Efficacy of Nonoperative Treatments for Greater Trochanteric Pain Syndrome: A Systematic Review and Network Meta-Analysis of Randomized Controlled Trials

Aaron Gazendam, MD,* Seper Ekhtiari, MD, MSc,* Daniel Axelrod, MD, MSc,* Kyle Gouveia, BSc,†
Lauren Gyemi, BSc,† Olufemi Ayeni, MD, PhD,* and Mohit Bhandari, MD, PhD*

Steroid
Platelet-rich plasma
Hyaluronic acid
Dry needling
Structured exercise program
Extracorporeal shock-wave therapy

- 13 RCTs, 1034 pts
- PRP and ECSW may provide short term pain relief
- Structured PT may lead to short term improvements in outcomes

Gazendam et. al, CJSM 2022

Management Plan

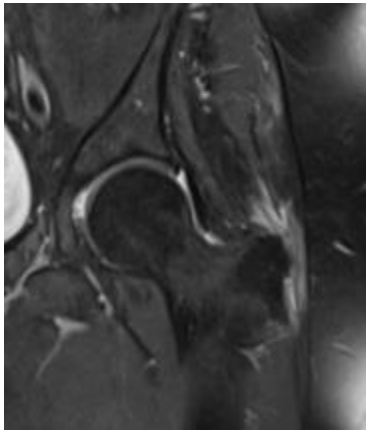
LR-PRP Injection

Diagnostic injection

Operative treatment

Both open and endoscopic gluteal tendon repairs lead to functional improvement with similar failure rates: a systematic review

Robert Longstaffe [1], Patrick Dickerson,[2] Charles A Thigpen,[2,3] Ellen Shanley,[2,3] Michael J Kissenberth,[2] Jason Folk,[2] Stephan G Pill[2]



- 22 studies, 611 hips (388 open vs. 223 endoscopic)
- 91% females
- Older patients in the open repair group (63.8 vs. 59.5, $p<0.05$)
- Mean time to repair = 34.2 months (1-240 months)

Longstaffe et. al, J ISAKOS 2021

Both open and endoscopic gluteal tendon repairs lead to functional improvement with similar failure rates: a systematic review

Table 3 Patient-reported outcome measures

Technique	Outcome	Hips (n)	Pre	Post	Mean change
Endoscopic					
	mHHS	168	49.9	78.8	28.9
	HHS	25	65.2	92.2	27.0
	HOS-ADL	116	54.5	83.1	28.5
	HOS-SS	130	33.8	71.4	37.6
	VAS	161	6.6	2.2	4.4
	NASH	79	48.3	79.9	31.6
Open					
	mHHS	23	53	88	35
	HHS	198	54.4	86.7	32.3
	VAS	236	7.2	1.8	5.4
	Oxford	169	25	40.1	15.1

Table 4 Outcomes following gluteal tendon repair

	Open		Endoscopic		
Outcome	Hips (n)	Result	Hips (n)	Result	Overall
Satisfaction (out of 10)	22	9.1*	192	8.4	8.5
Satisfaction ('yes' or 'no')	132	94.0 %	–	–	94.0 %
Abductor strength increase	23	1.6	68	0.6	0.8
Gait resolution (%)	71	76.1 %	40	57.5%	69.4%

*Extrapolated to out of 10.

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Longstaffe et. al, J ISAKOS 2021

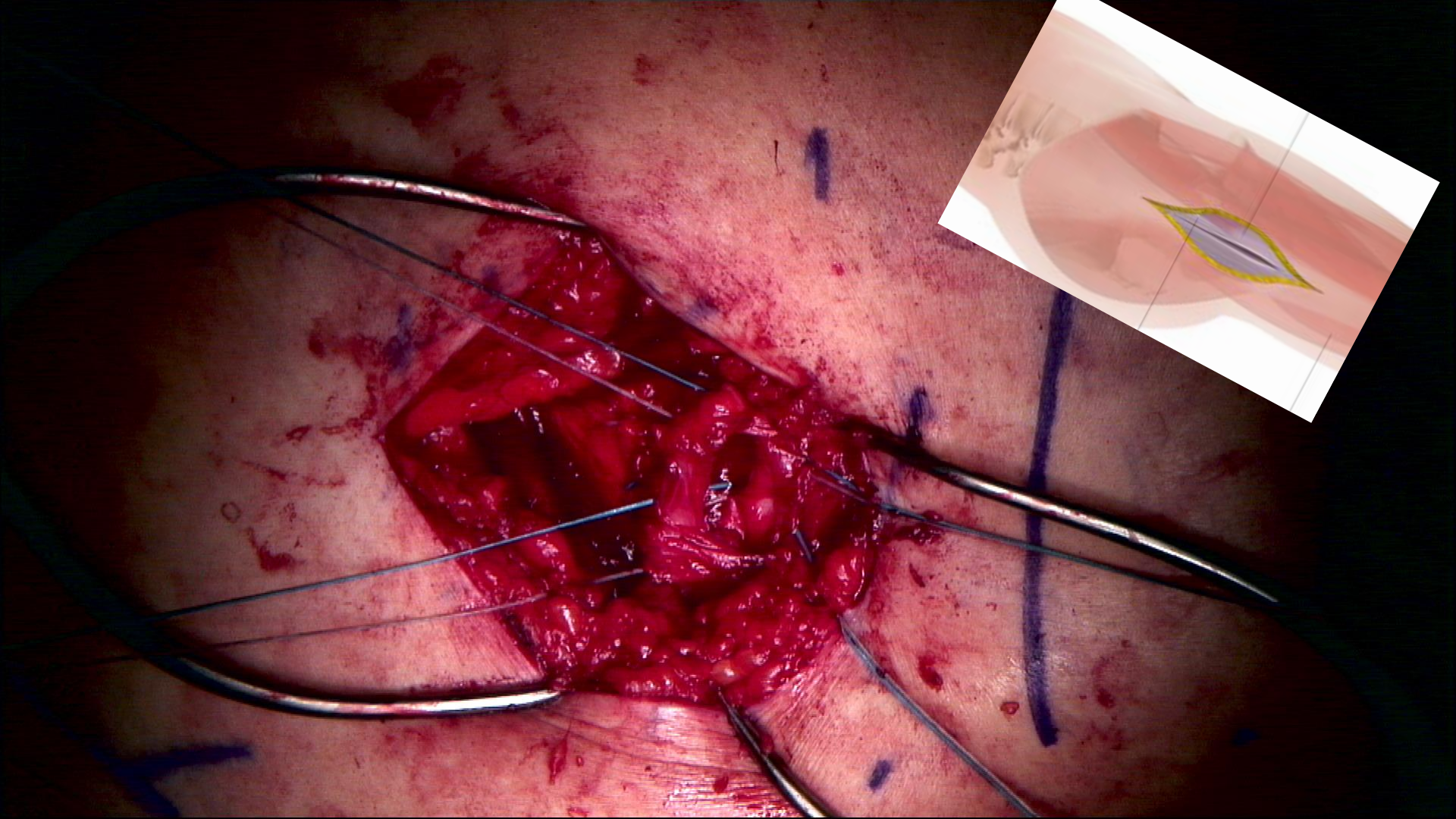
Both open and endoscopic gluteal tendon repairs lead to functional improvement with similar failure rates: a systematic review

- Complications rate was higher in open repair group

Associated complication	Number
Open	
DVT	6
Haematoma	4
Deep Infection	2
PE	2
Superficial Iifection	2
Fracture of GT	1
Pressure sore	1
Hardware irritation requiring removal	1
Endoscopic	
Superficial infection	1

Limitation…LEVEL IV Evidence

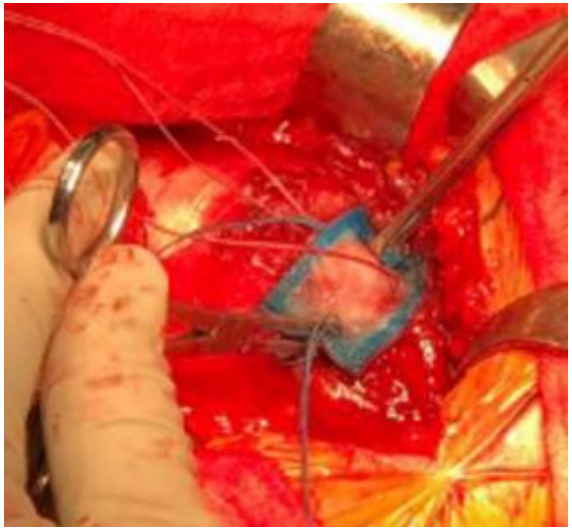
Longstaffe et. al, J ISAKOS 2021



Repair of gluteus medius tears with bioinductive collagen patch augmentation: initial evaluation of safety and imaging

Molly A. Day[1,2*], Kyle J. Hancock[1,3], Ryan S. Selley[1], Erica L. Swartwout[1], Matthew Dooley[1], Alan G. Shamrock[1,4], Benedict U. Nwachukwu[1], Harry G. Greditzer[5] and Anil S. Ranawat[1]

- 4 high grade tears (>=50%) vs. 5 low grade (<50%)
- All received open, double row repair with bioabsorbable collagen patch over the repair site



Day et. al, J Hip Pres 2021

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PRO measure	*n*	*Preoperative (mean ± SD)*	*n*	*6-month post-operative (mean ± SD)*	*P-value*
HOS Sport	7/8	10.3 ± 7.3	6/8	10.3 ± 11.1	0.43
HOS ADL	8/8	41.9 ± 8.5	7/8	66.0 ± 8.0	0.002
mHHS	8/8	48.2 ± 12.2	8/8	72.0 ± 13.7	0.01
iHOT	8/8	23.9 ± 9.7	8/8	72.1 ± 16.9	0.0007

Day et. al, J Hip Pres 2021

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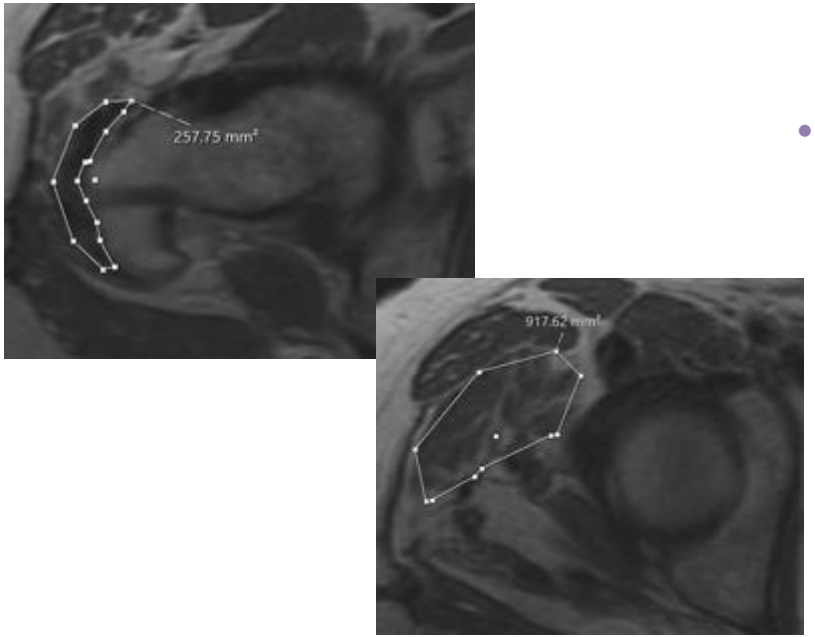

- Significant increases in tendon thickness, width, CSA = *robust healing response*

…BUT lack of control group

Day et. al, J Hip Pres 2021

Summary

- Gluteal tendinopathy may be conservatively managed with PRP and PT
- Time to diagnosis may be important in preventing muscle atrophy/fatty infiltration
- Open and endoscopic repair BOTH provide improved clinical outcomes
- A collagen, bio-inductive patch may provide a safe, useful augmentation to gluteus tendon repairs

Level 1 evidence and long term follow-up necessary!

Thank you!

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Team Physician, Northwestern Football, USA Women's National Soccer Team

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