

# Around the thigh in 20 mins

(In search of forgotten muscles)

Anatomy, function, and sonographic appearances of Hamstrings,  
Adductor Magnus, Gracilis, and Sartorius

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# Introduction

## Surface anatomy of the posterior thigh

Rectus Femoris

Anatomy and function

Vastus Intermedius

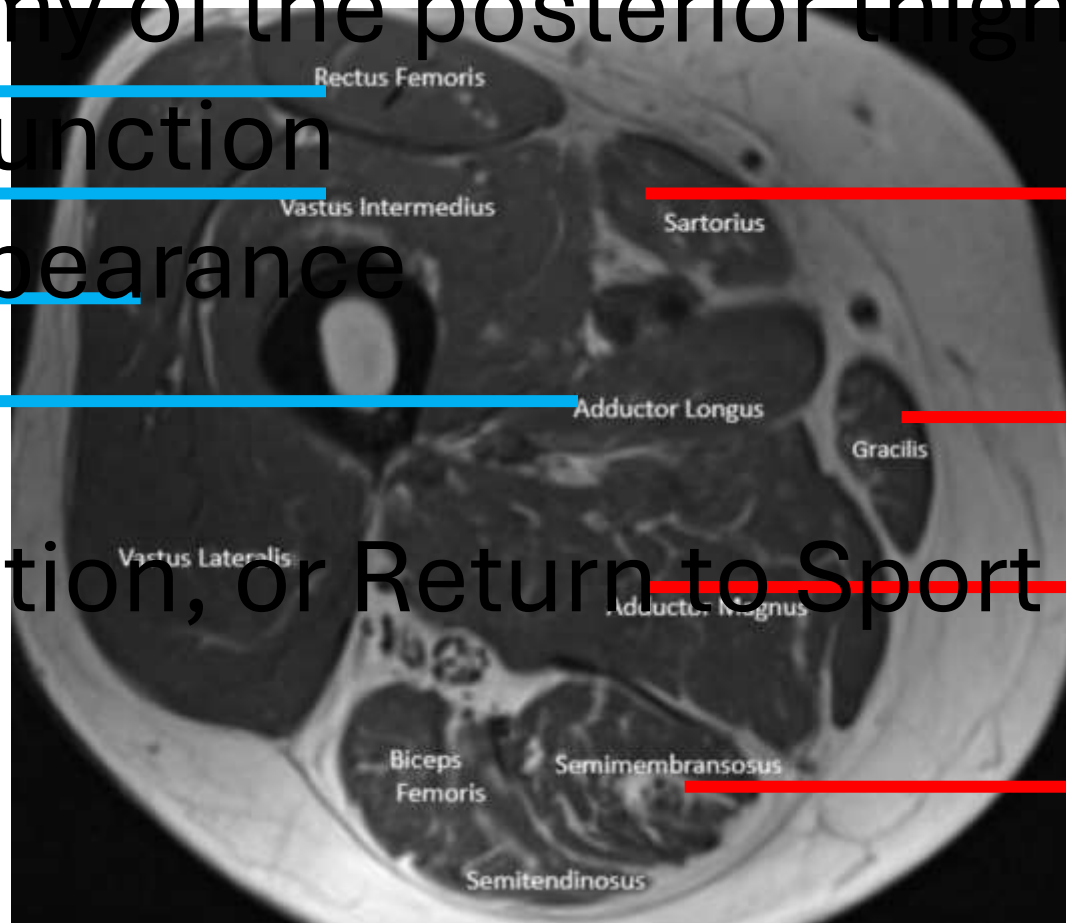
Ultrasound appearance

Vastus Lateralis

Adductor Longus

Not covering

Tears/tear location, or Return to Sport / Fitness/Play



Sartorius

Gracilis

Adductor Magnus

Biceps Femoris

Semitendinosus

Semimembranosus

# Surface anatomy – posterior thigh ‘top to bottom’

Greater trochanter

Ischial tuberosity

Sciatic Nerve

Adductor magnus

Medial Tibia

Head of Fibula

Gluteus Maximus

Gracilis

Semimembranosus

Biceps Femoris

Semitendinosus



# Biceps Femoris

Proximal  
with the  
sacrospinous

**Long head** lower medial facet ischial tuberosity  
tendon of semitendinosus and the  
ligament

**Short head** lower half of the lateral lip of  
the Linea Aspera

Distal

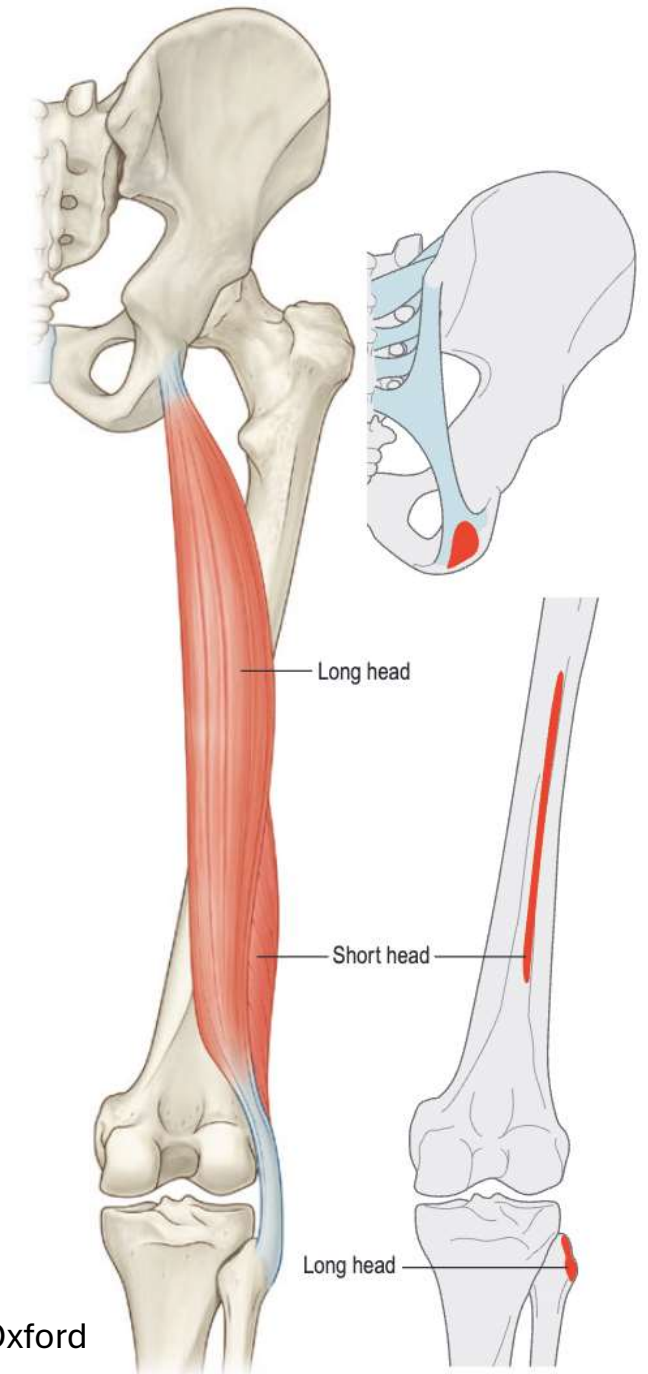
Head of the fibula, divided by the lateral collateral  
ligament

Innervation

Long head, tibial division of the sciatic nerve  
Short head common peroneal nerve

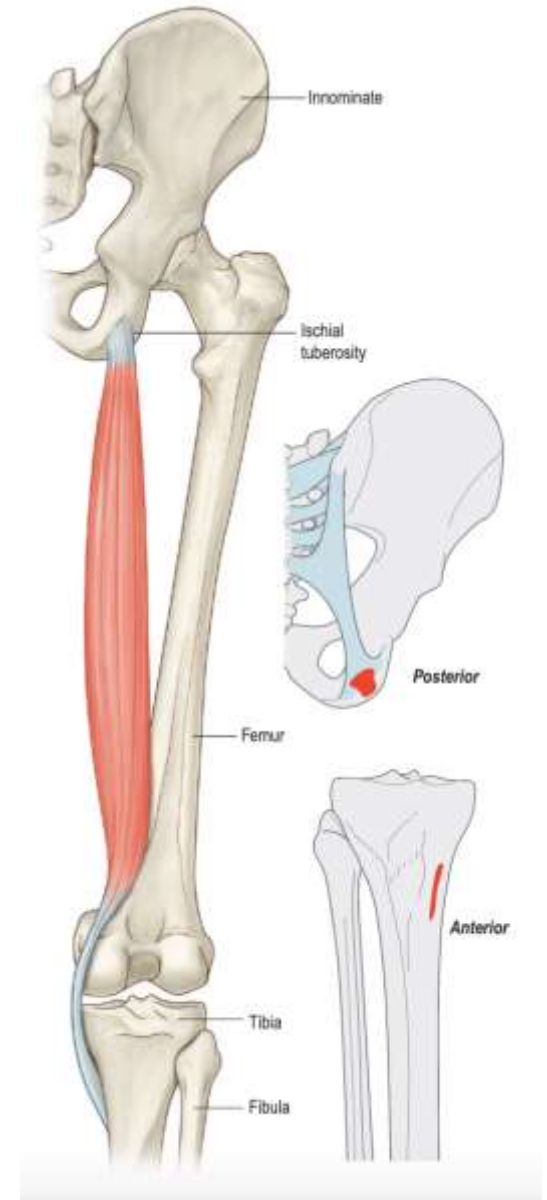
Main Action

Knee flexor  
Hip extensor with trunk flexed  
Laterally rotates flexed knee



# Semitendinosus

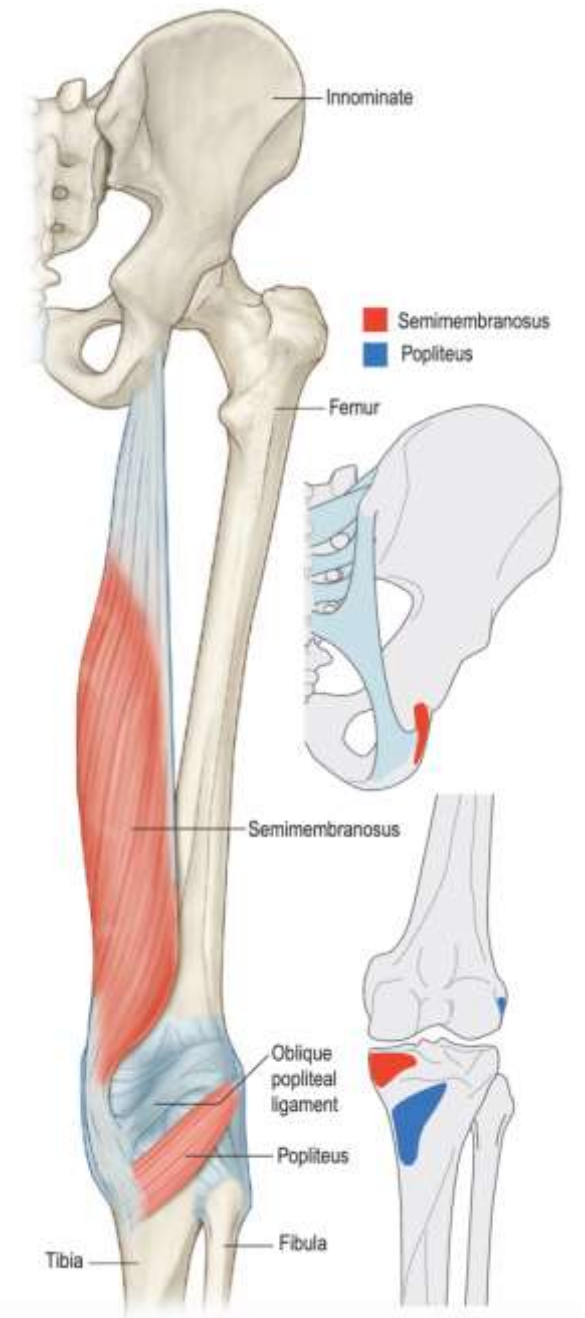
Proximal	Lower middle facet Ischial tuberosity combined (common tendon) with long head of biceps femoris
Distal	Medial surface of medial condyle of the tibia, behind Sartorius and behind and below Gracilis
Innervation	Tibial division of the Sciatic nerve
Main Action	Extends the hip on a bent trunk Knee flexion Helps medially rotate a flexed knee





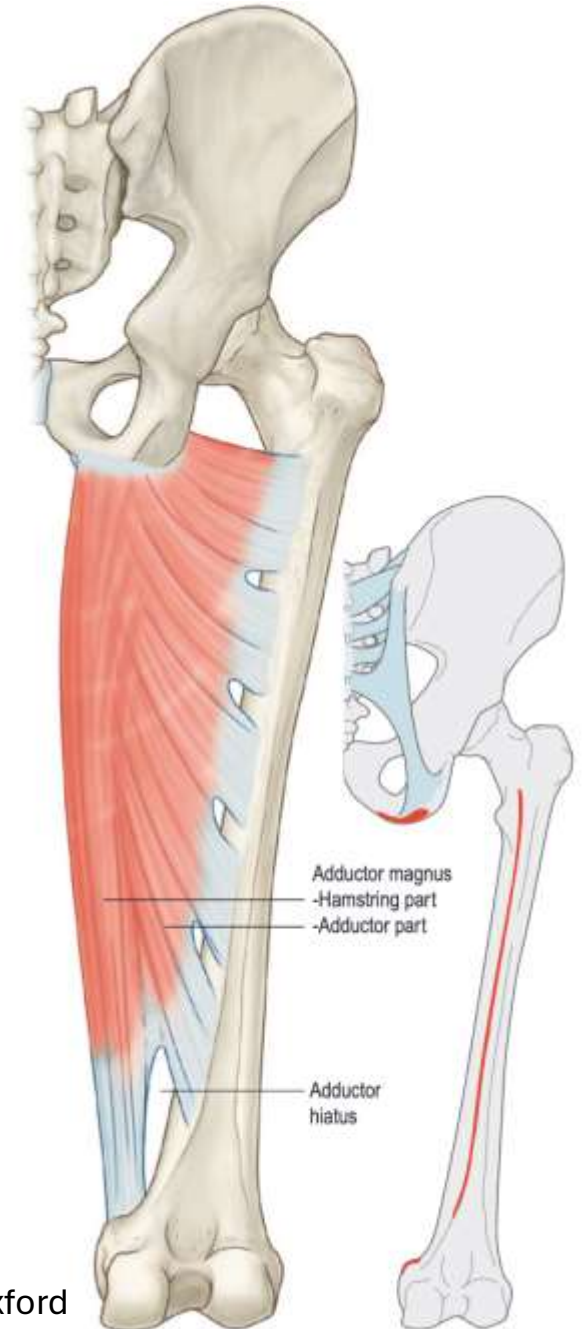
# Semimembranosus

Proximal	Upper lateral facet of ischial tuberosity
Distal	Groove on the medial surface of the tibial condyle sending off fibers in multiple directions contributing to the oblique popliteal ligament
Innervation	Tibial division of the sciatic nerve L5/S1 and S2
Action	As semitendinosus



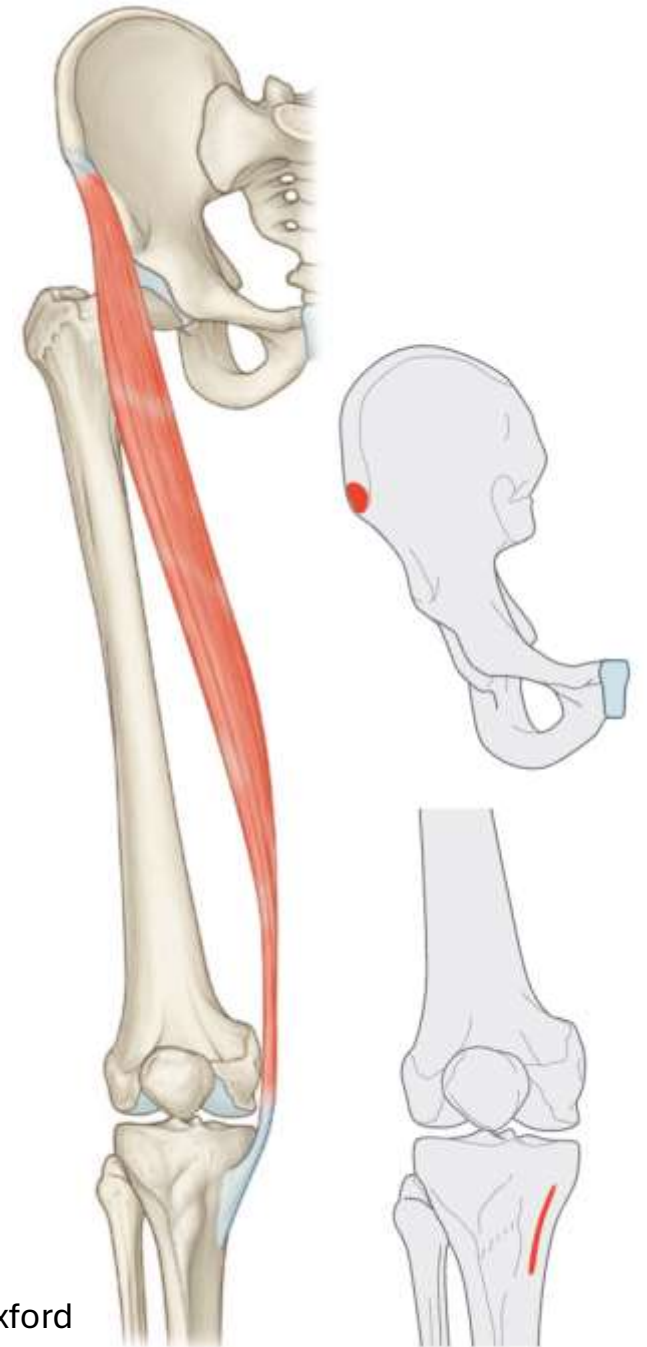
# Adductor Magnus

Proximal	Femoral surface ischiopubic ramus to lateral part of Inferior surface of the ischial tuberosity
Distal	Linea Aspera and medial supracondylar ridge
Innervation	Dual supply Adductor Portion posterior division of Obturator nerve L2/L3 Hamstring Tibial division Sciatic nerve L4
Action	Adductor of hip Posterior portion hip extension



# Sartorius

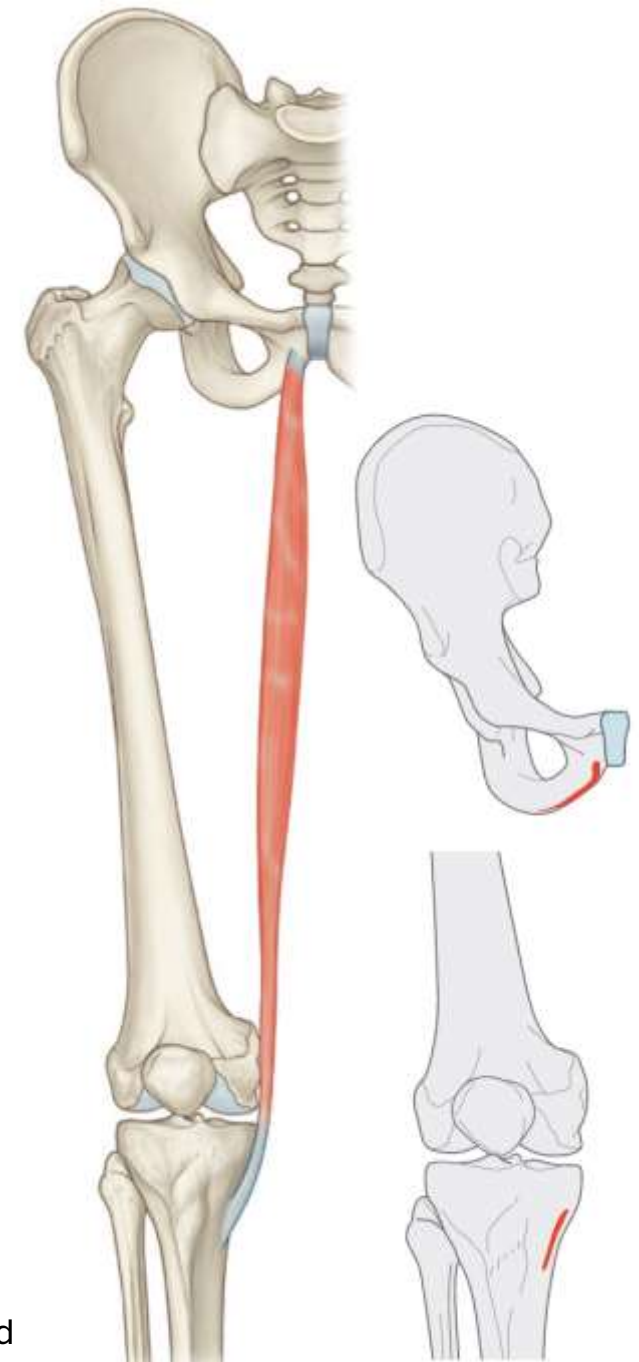
Proximal	ASIS
Distal	Medial shaft of tibia, anterior to semitendinosus and Gracilis, which it blends with, at its lower end separated from Gracilis by a small bursa
Innervation	Femoral nerve L2/L3
Main Action	Combined movements Flexion of hip, and flexion of hip and knee





# Gracilis

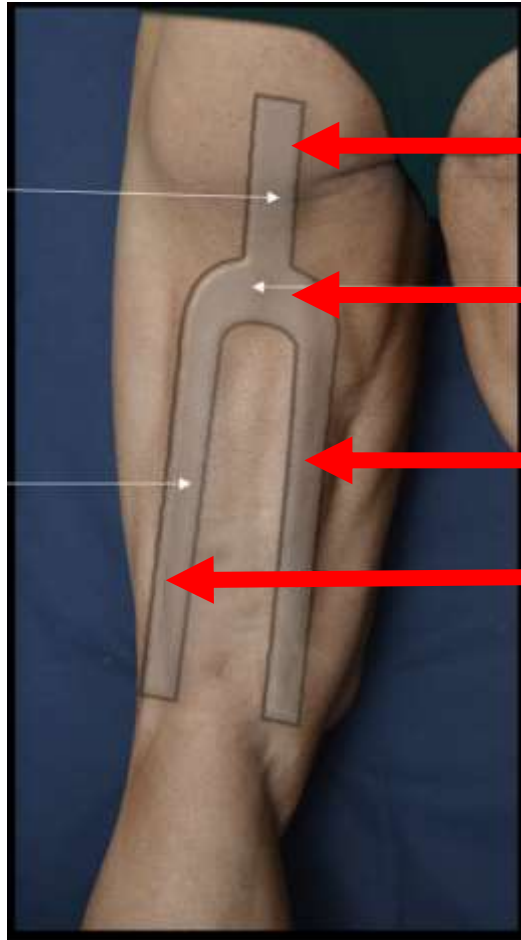
Proximal	Body of Pubis, inferior to the Ramus
Insertion	Upper medial surface of tibia above semitendinosus and behind Sartorius
Innervation	Anterior division of the Obturator Nerve L2/L3
Action	Classified as an adductor of the hip, it is a minor hip adductor, with a larger influence on knee flexion and medial rotator of a flexed knee
Relationships	Descends between the anteriorly placed Sartorius and posteriorly placed semimembranosus



# Ultrasound assessment

- Hamstrings
- Sartorius
- Gracilis
  
- Adductor Magnus

# Hamstrings – Tuning fork analogy



- Neck - Hamstring origin, Common Flexor tendon
- Shoulders - Biceps Femoris, Semitendinosus muscle and Semimembranosus tendon
- Medial arm - Semitendinosus and Semimembranosus
- Lateral arm - Biceps Femoris

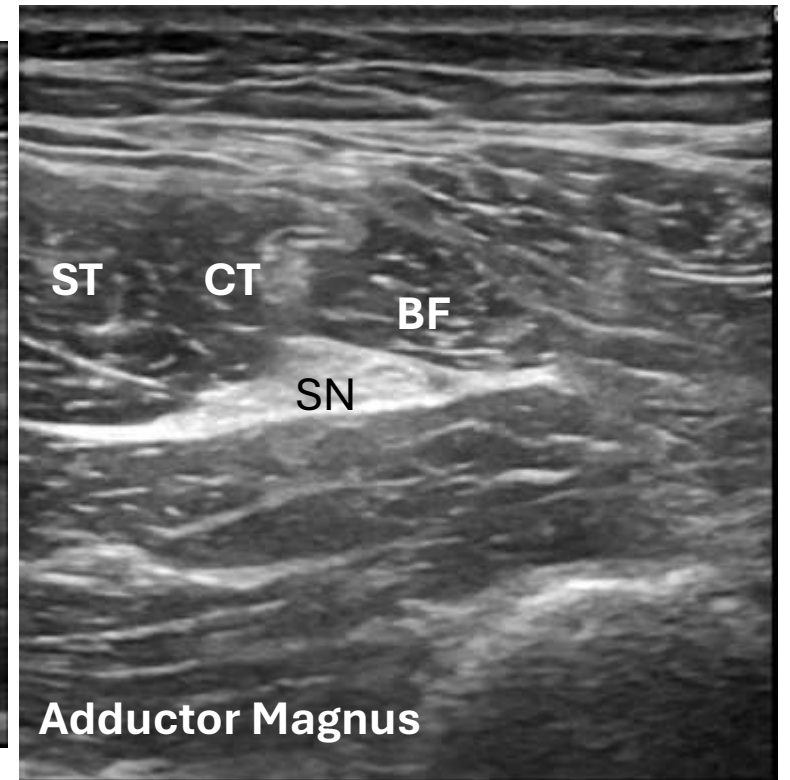
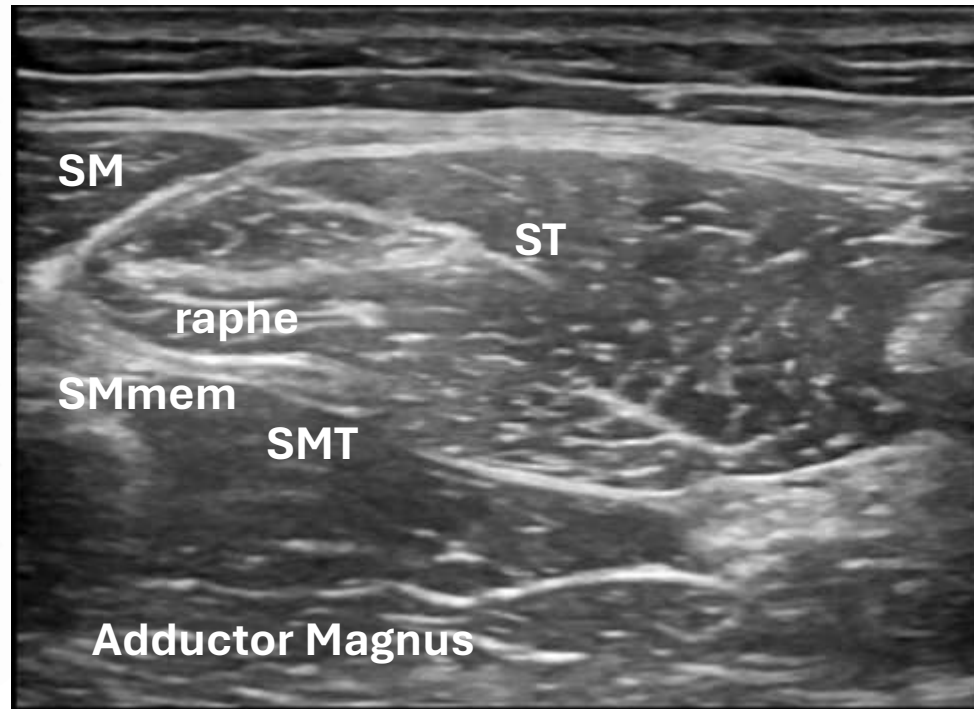
**There's no hard and fast rules where the scan is started**

**Important you find your orientation**

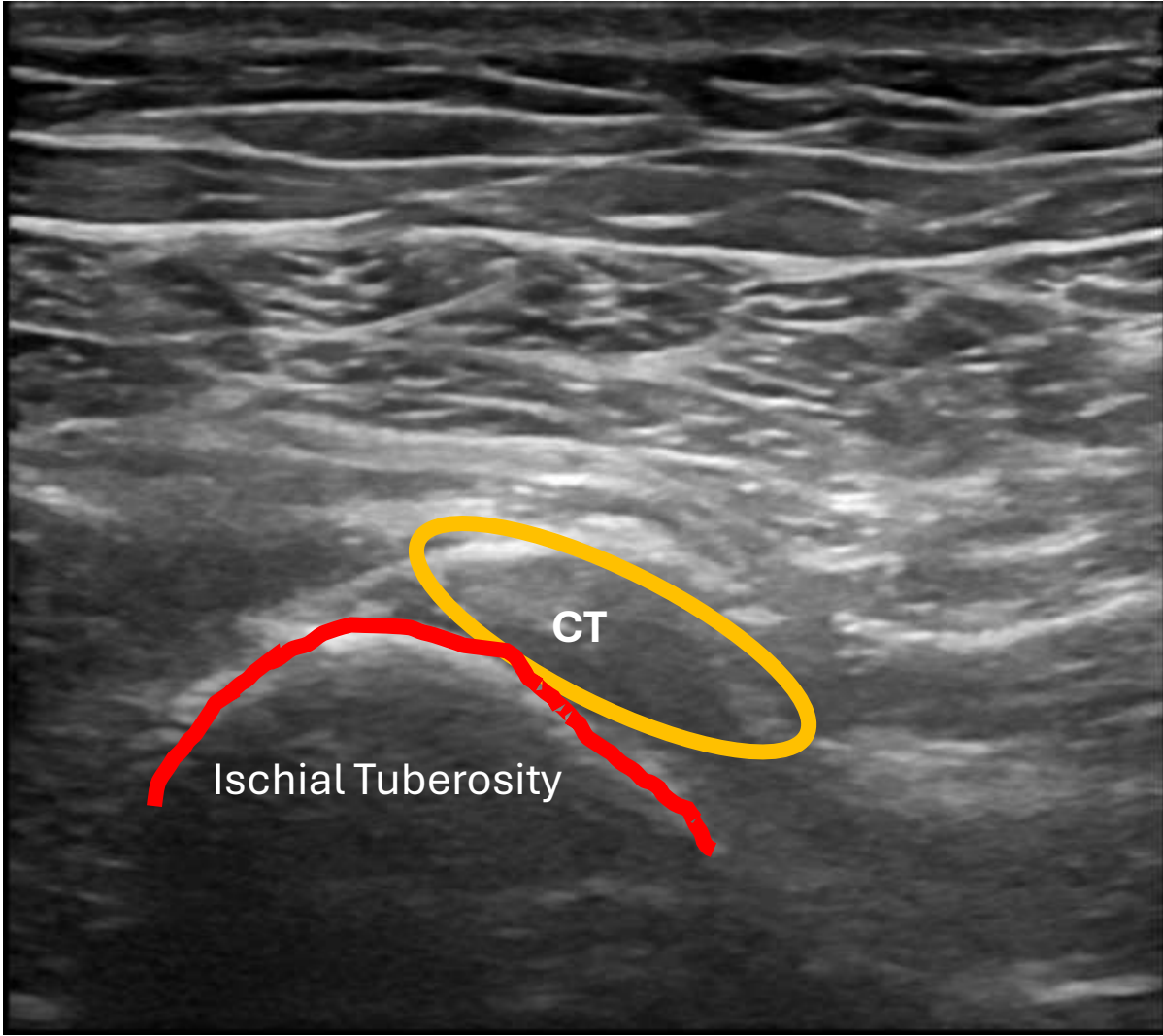
**Although starting at the buttock crease is a good place for initial probe placement**

Balluis, R, et al (2019) Sonographic landmarks in hamstring muscles. Skeletal Radiology <https://doi.org/10.1007/s00256-019-03208-x>

# Shoulders of the tuning fork



# 'Neck of the Tuning fork', insertion common flexor tendon

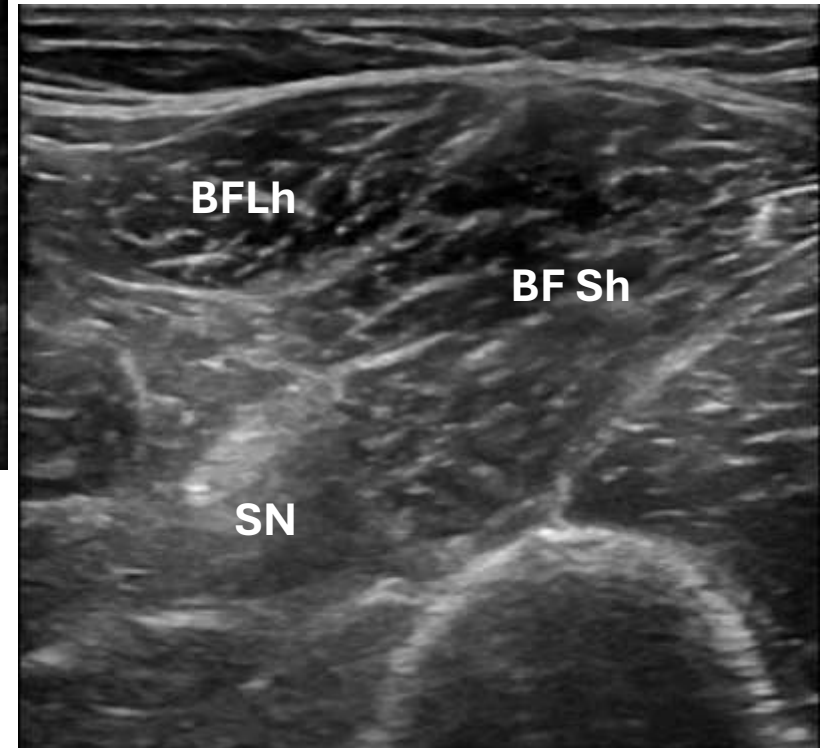
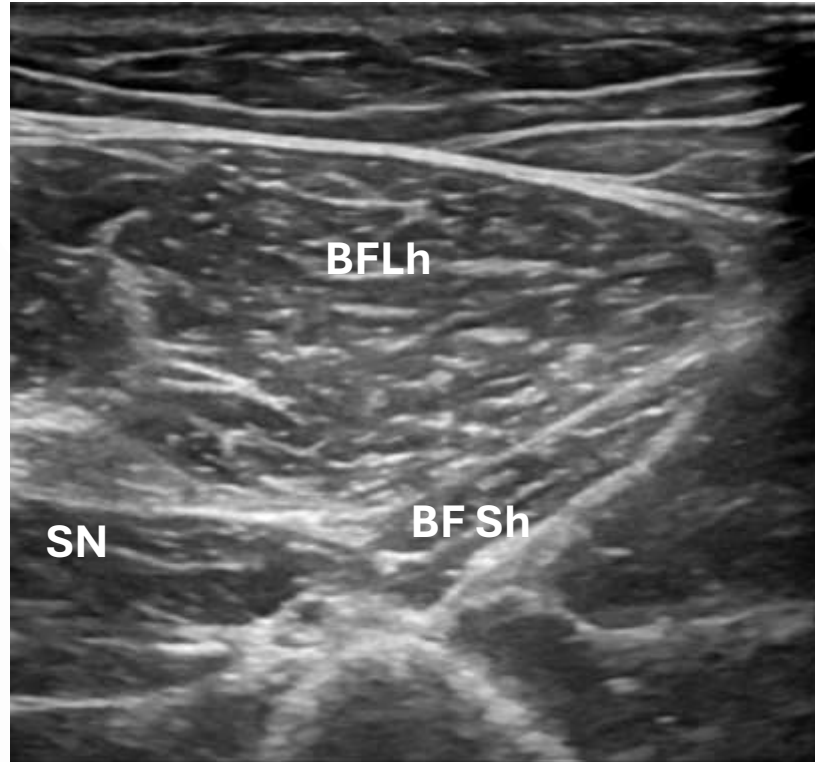




# 'Tuning fork neck' insertion common flexor tendon



# Lateral arm - Biceps Femoris

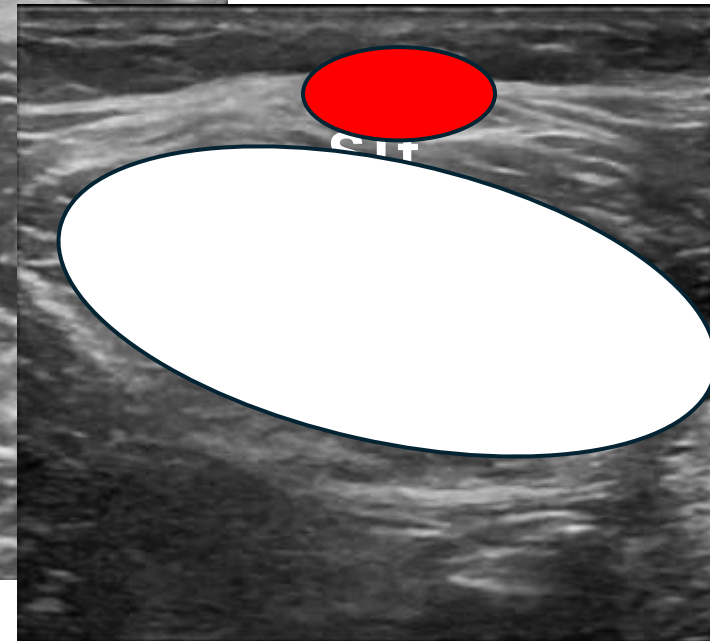
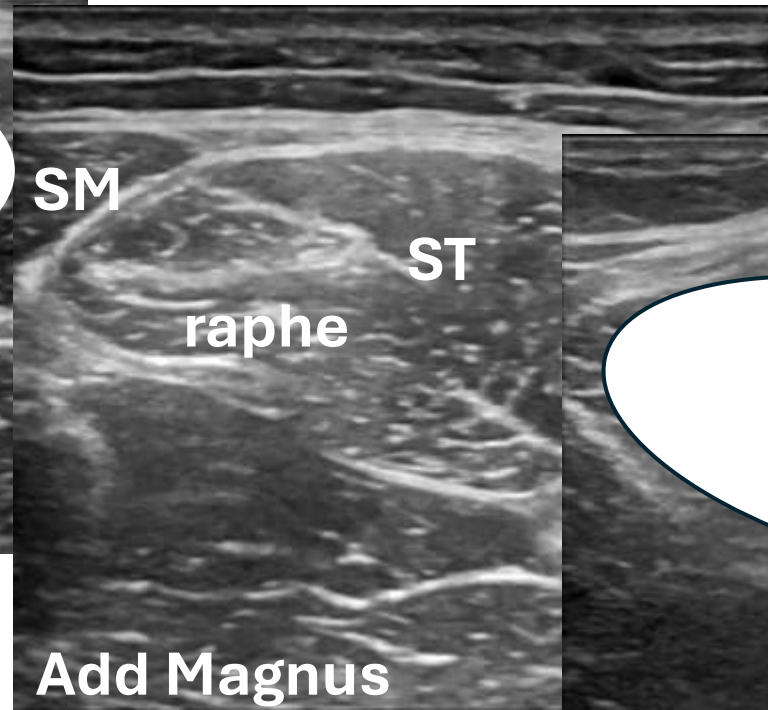
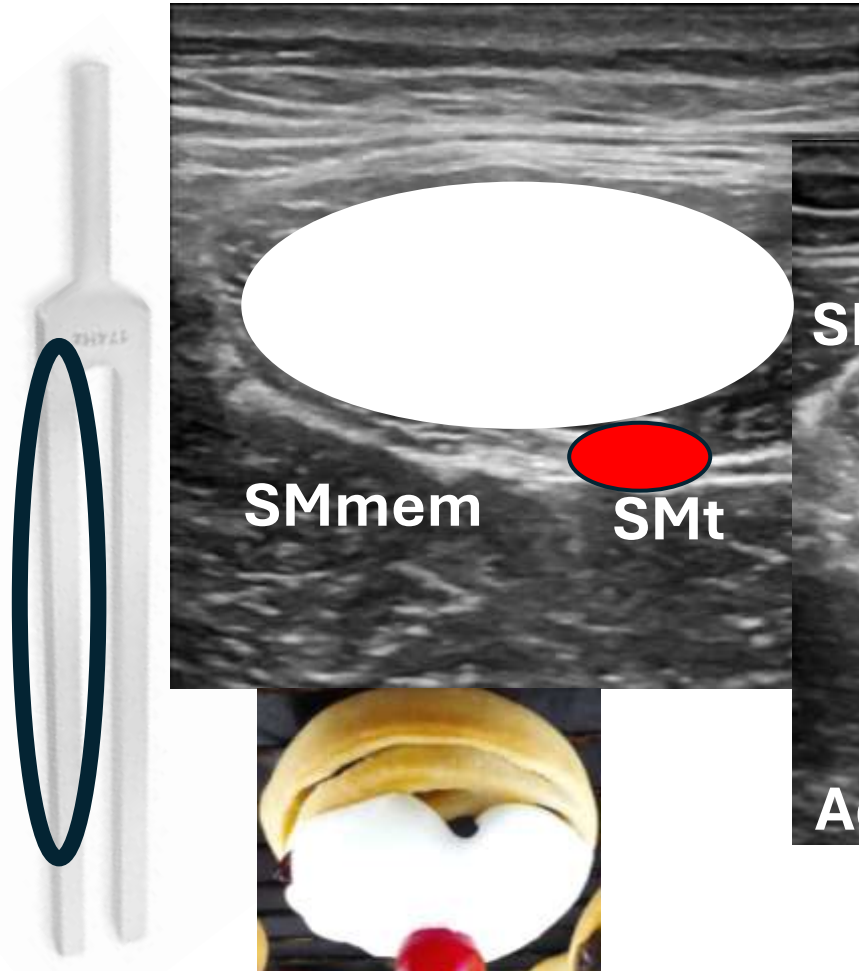


# Lateral arm - Biceps Femoris





# Medial arm – Semitendinosus & Semimembranosus

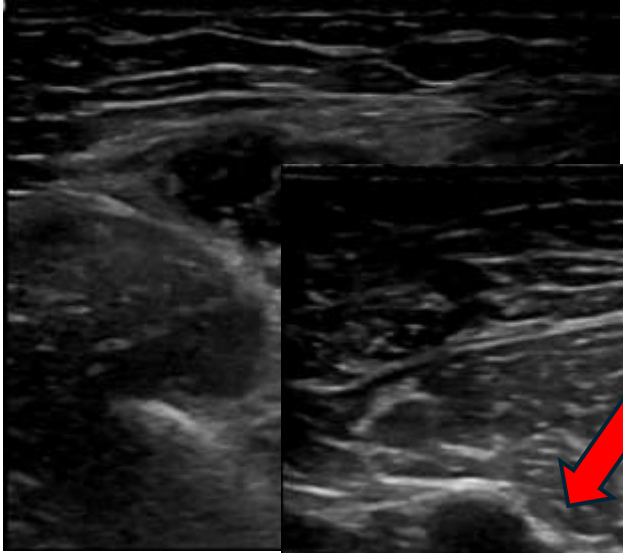


# Medial arm - Semitendinosus & Semimembranosus

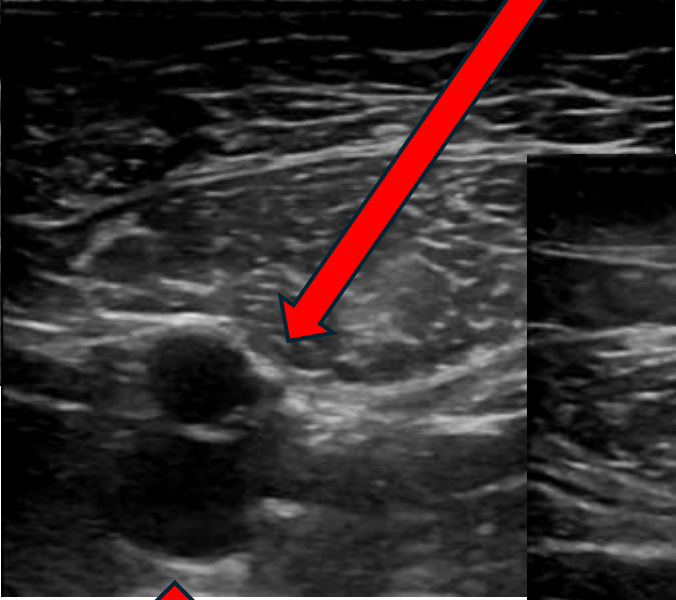




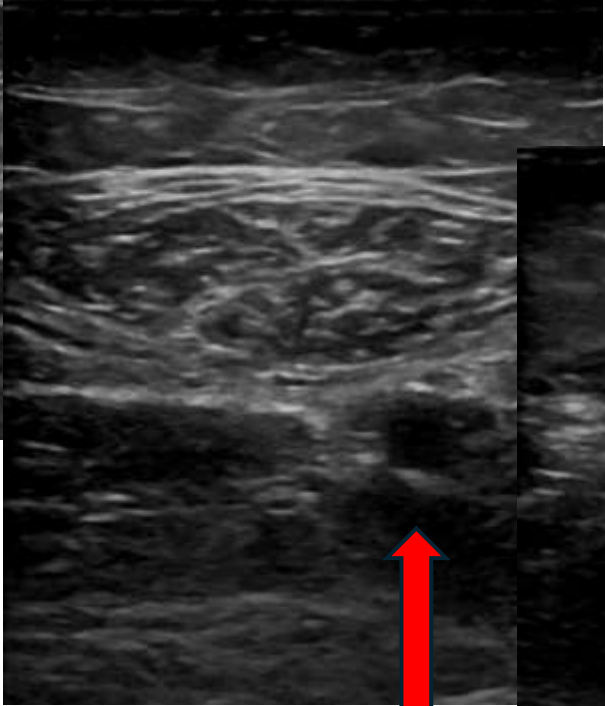
# Sartorius



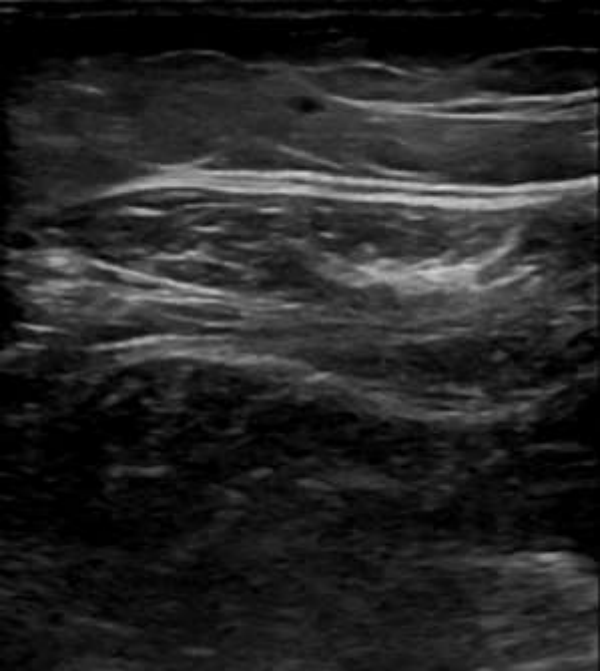
Sub sartorius/  
Hunter's Canal



Femoral  
Vessels



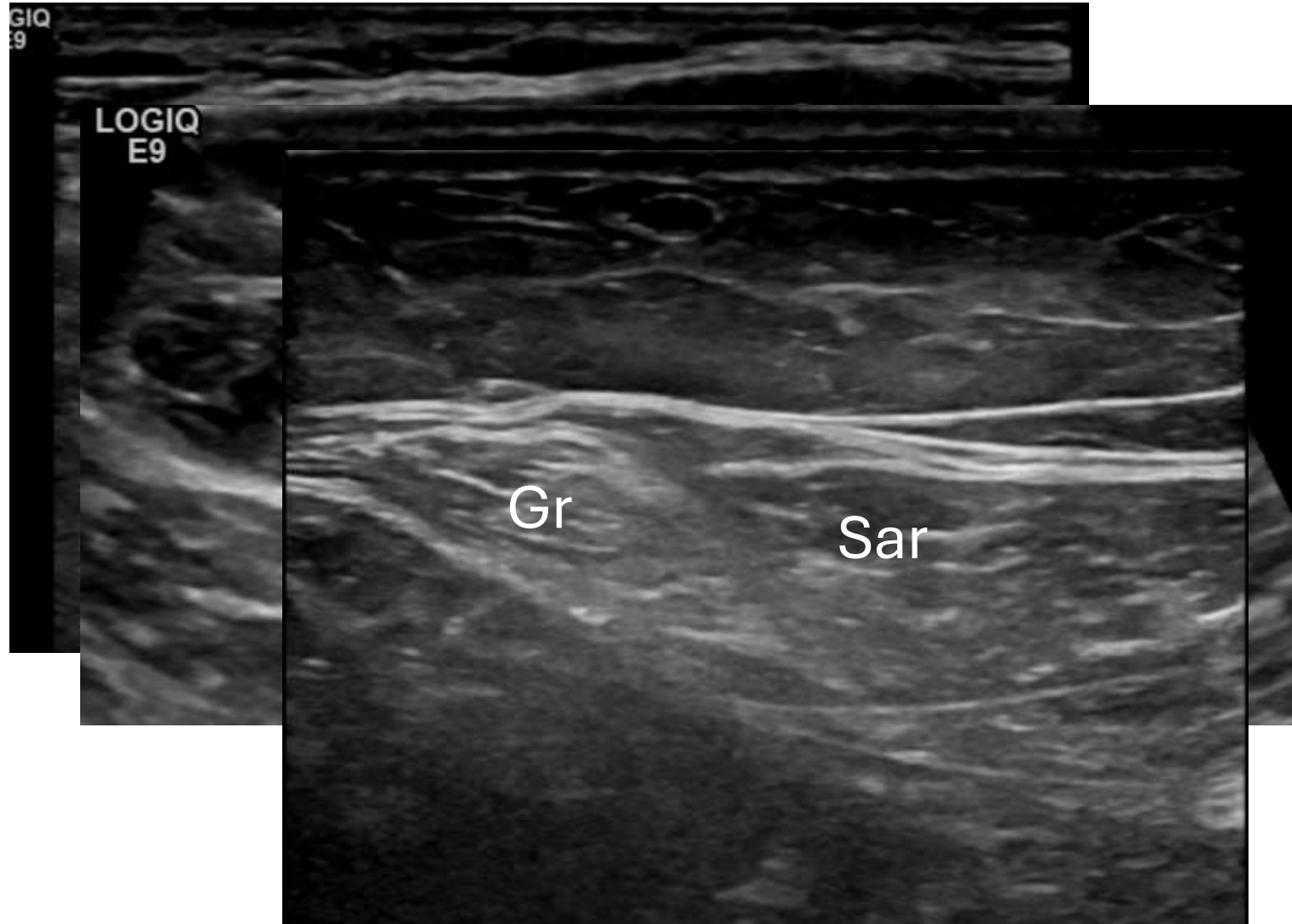
Prox. to adductor hiatus



# Sartorius



# Gracilis



# Gracilis



# Summary

- Surface anatomy of posterior thigh
- Anatomy and function of Hamstrings, Sartorius, Gracilis and Adductor Magnus
- Ultrasound appearance of Hamstrings, Sartorius, Gracilis and Adductor Magnus



Thank you for listening...

