Hip Abductor Insufficiency

AL-MAYAHI Mohamed

Chef de clinique adjoint

Centre d’orthopédie d’Ouchy
Medicol

GREATER TROCHANTERIC PAIN SYNDROME: DEFINITION

Peritrochanteric pain and focal tenderness.

Occurs in up to 10–25 % of the general population.

The incidence is 1.8 patients per 1,000 per year

=>Historically : Trochanteric bursitis.

Long SS, Surrey DE, Nazarian LN. **Sonography of greater trochanteric pain syndrome and the rarity of primary bursitis.** AJR Am J Roentgenol 2013

Segal NA, Felson MC. **Greater trochanteric pain syndrome: epidemiology and associated factors**. Arch Phys Med Rehabil. 2007

GREATER TROCHANTERIC PAIN SYNDROME
DEFINITION

Abductor tendon lesions.

Non-inflammatory insertional tendinopathy of gluteus medius and gluteus minimus.

Iliotibial band friction syndrome.

External coxa saltans.

Albers IS, Zwerver J, **Incidence and prevalence of lower extremity tendinopathy in a Dutch general practice population: a cross-sectional study**. BMC Musculoskelet Disord 2016

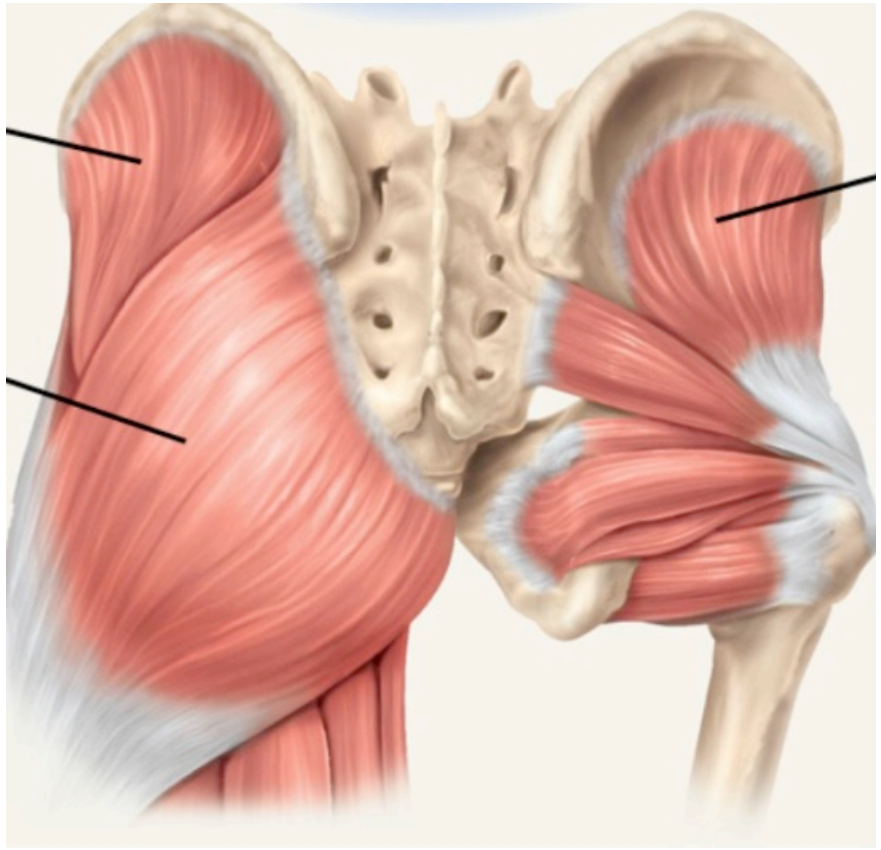
Long SS, Surrey DE, Nazarian LN. **Sonography of greater trochanteric pain syndrome and the rarity of primary bursitis.** AJR Am J Roentgenol 2013;

ABDUCTOR TENDON LESIONS

Hip abductor tendinopathy can range from

- Tendinosis.
- complete tendon rupture.
- muscle fat atrophy

GLUTEAL MEDIUS ANATOMY



GLUTEAL MEDIUS ANATOMY

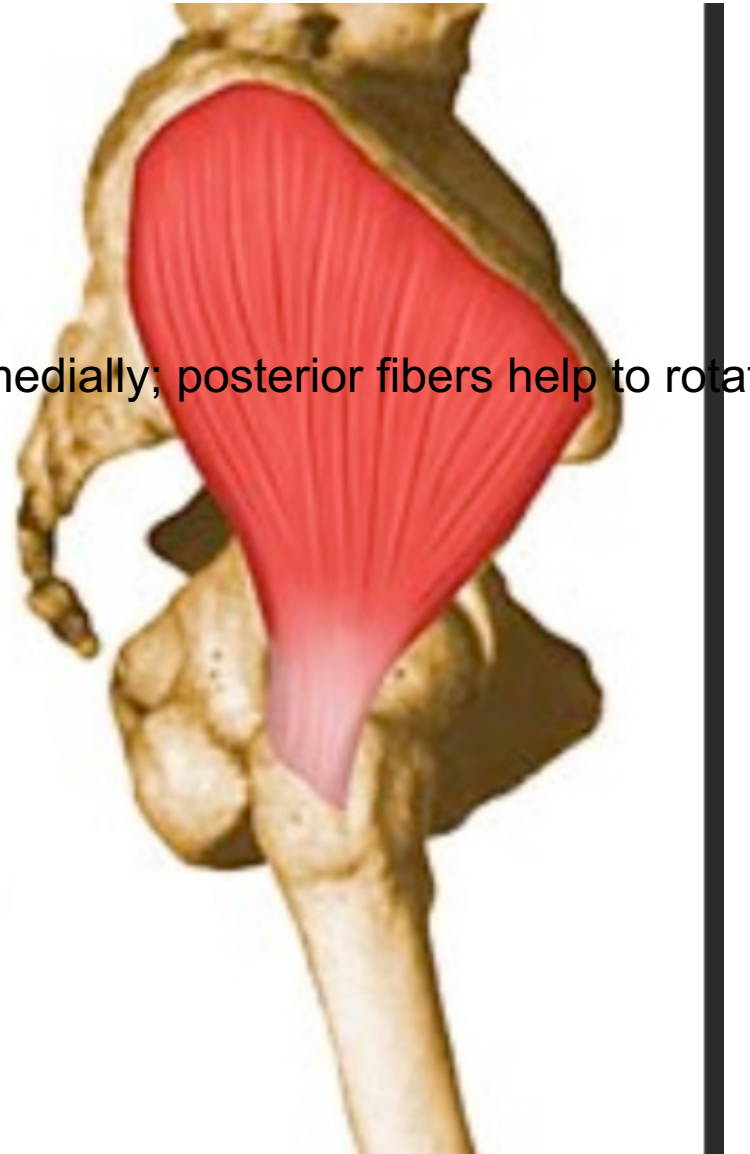
Origin: Dorsal ilium inferior to iliac crest

Insertion: Lateral and superior surfaces of greater trochanter

Action: Major abductor of thigh; anterior fibers help to rotate hip medially; posterior fibers help to rotate hip laterally

Innervation: Superior gluteal nerve (L4, L5, S1) (L4, L5, S1)

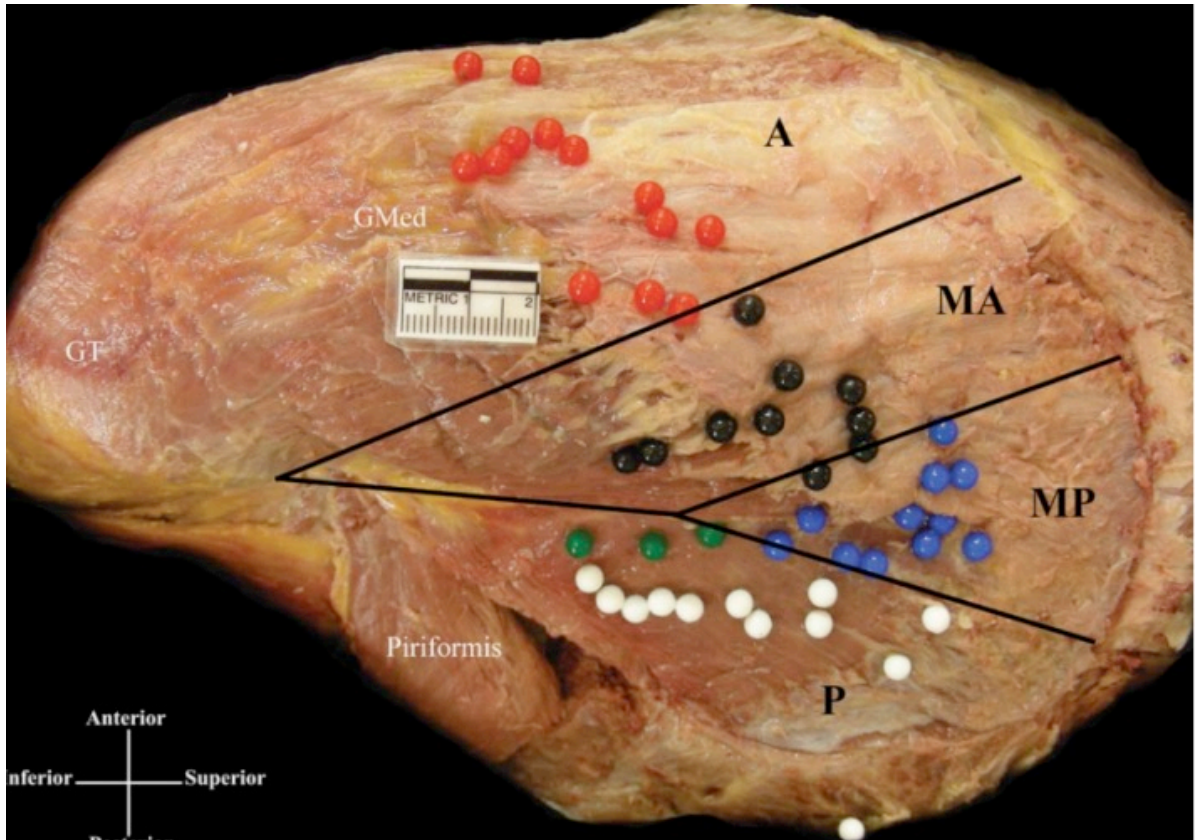
Arterial Supply: Superior gluteal artery

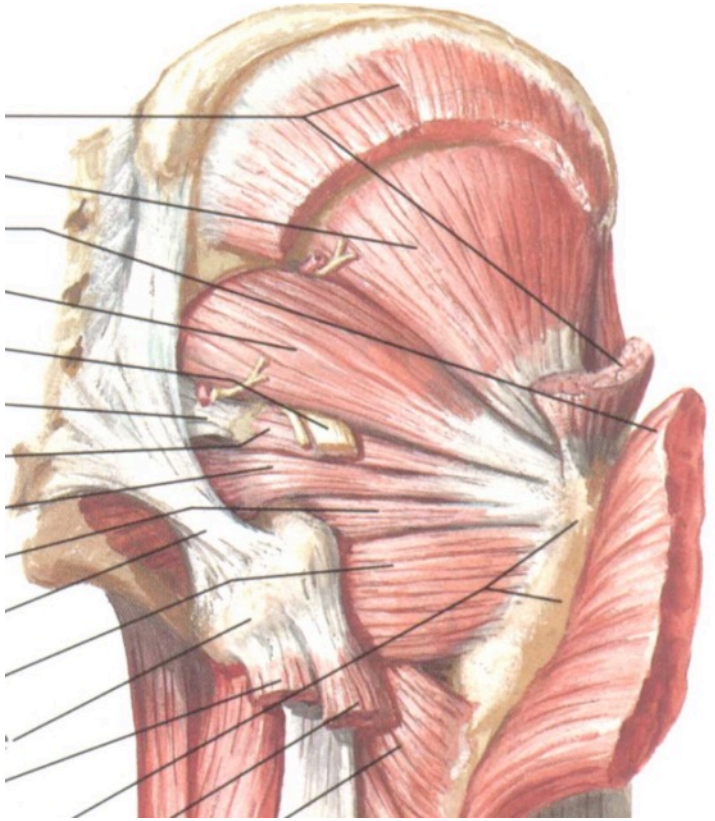


GLUTEUS MEDIUS ANATOMY

can be divided functionally and anatomically into 3 parts; the anterior, middle and posterior compartments.

A recent cadaveric study demonstrated three distinct GMed origins: gluteal fossa, aponeurosis, and the posteroinferior edge of the iliac crest.





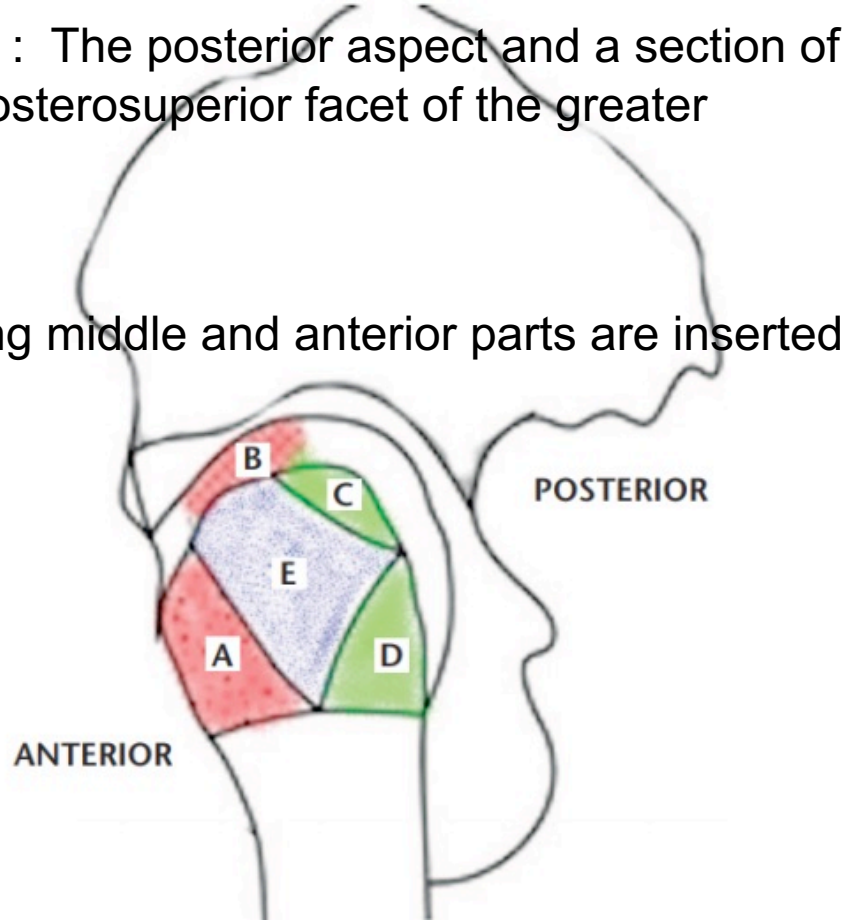
GLUTEUS MEDIUS ANATOMY

Insertion sites of the gluteus medius:

C: **posterosuperior facet of the Gmed** : The posterior aspect and a section of the middle portion are inserted on the posterosuperior facet of the greater trochanter.

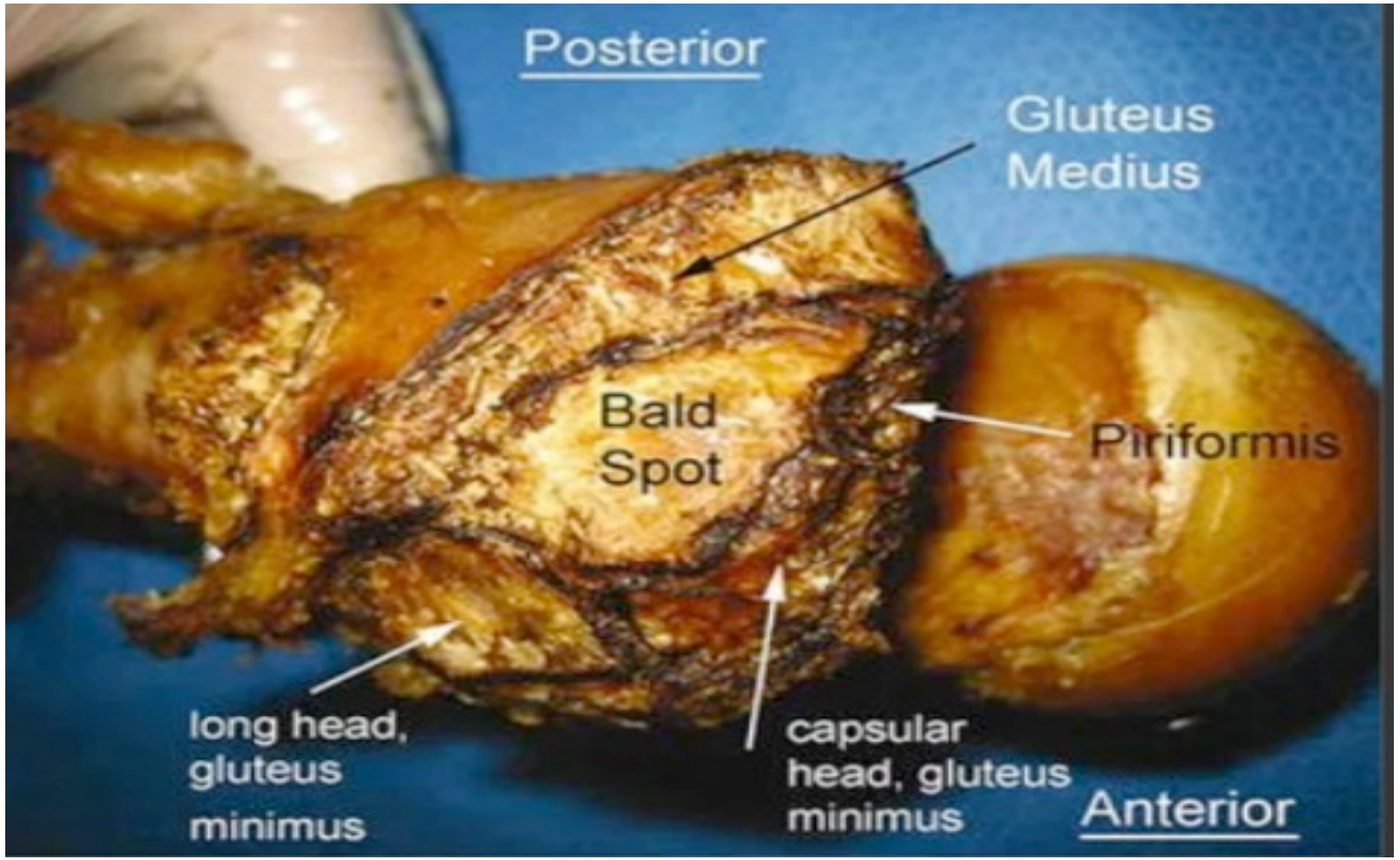
D: **lateral facet of the GT:** The remaining middle and anterior parts are inserted on the lateral trochanteric facet

E: bald area



PERITROCHANTERIC SPACE ANATOMY

Strauss EJ, Nho SJ, Kelly BT: **Greater trochanteric pain syndrome.** Sports Med Arthrosc 2010;18



GLUTEUS MINIMUS
ANATOMY

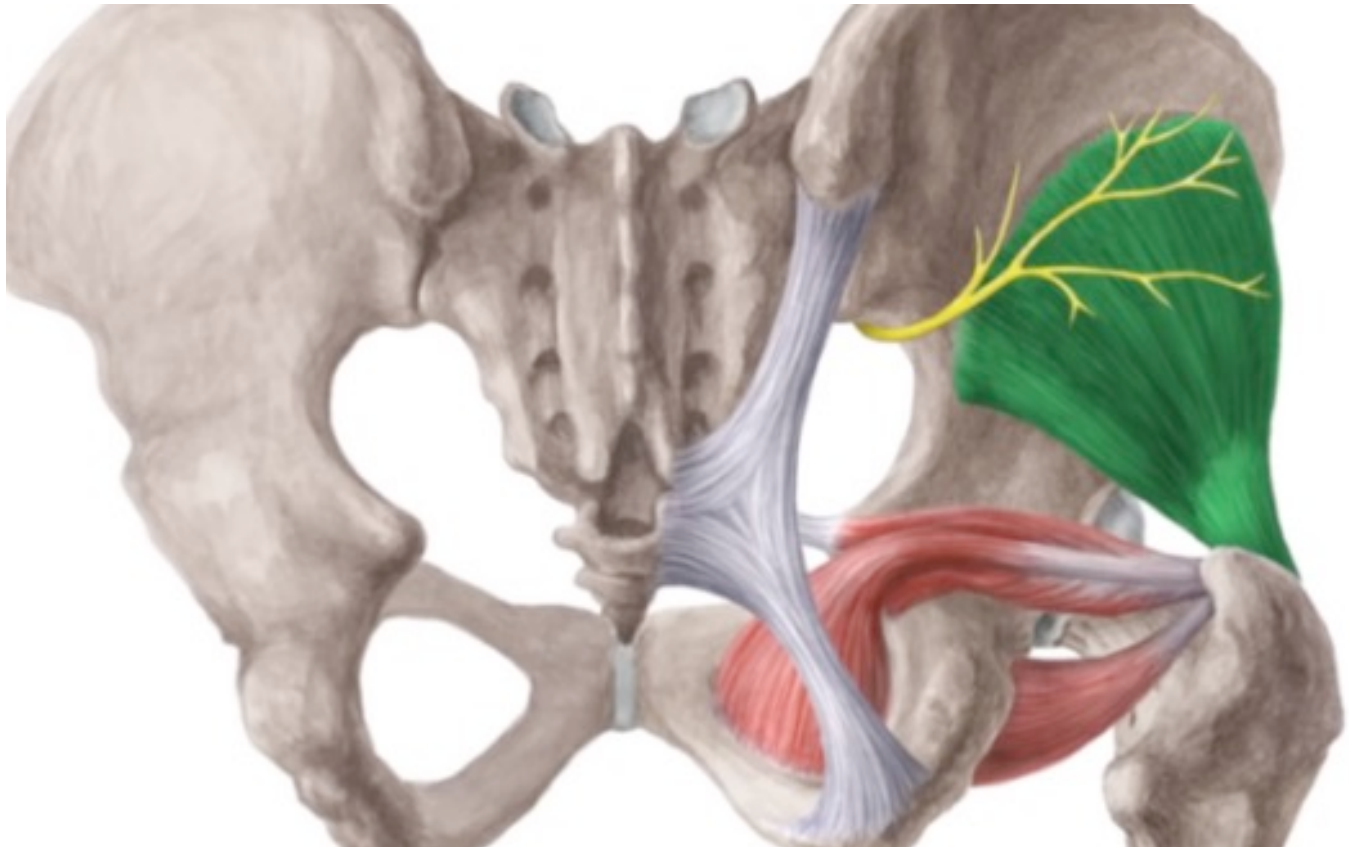
Origin: Dorsal ilium between inferior and anterior gluteal lines; also from edge of greater sciatic notch

Insertion : Anterior surface of greater trochanter

Action: Abducts and medially rotates the hip joint

Innervation Superior gluteal nerve (L4, L5, S1)

Arterial Supply Superior gluteal artery



GLUTEUS MINIMUS ANATOMY

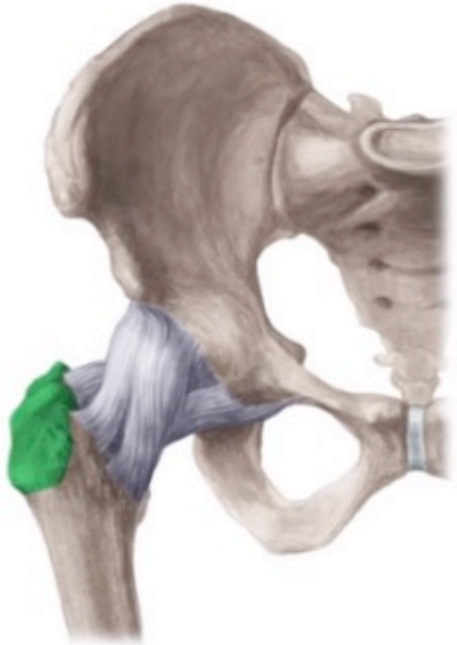
MEDICOL

origin:

Between the anterior and inferior gluteal lines of the ilium.

insertion:

Greater trochanter of the femur.



GLUTEUS MINIMUS ANATOMY

MEDICOL

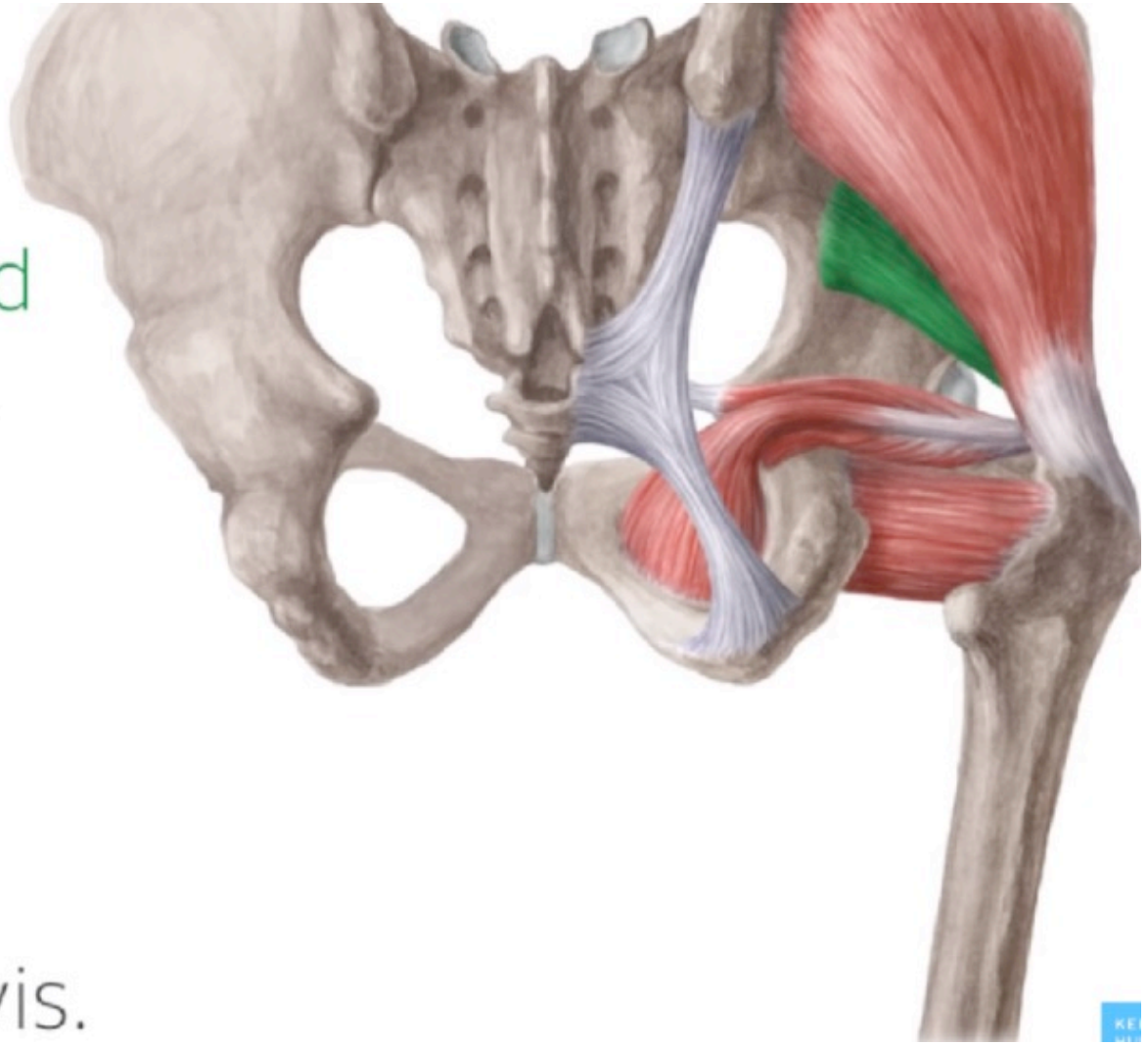
function:

One of the most powerful abductors and internal rotators of hip.

Flexion and internal rotation.

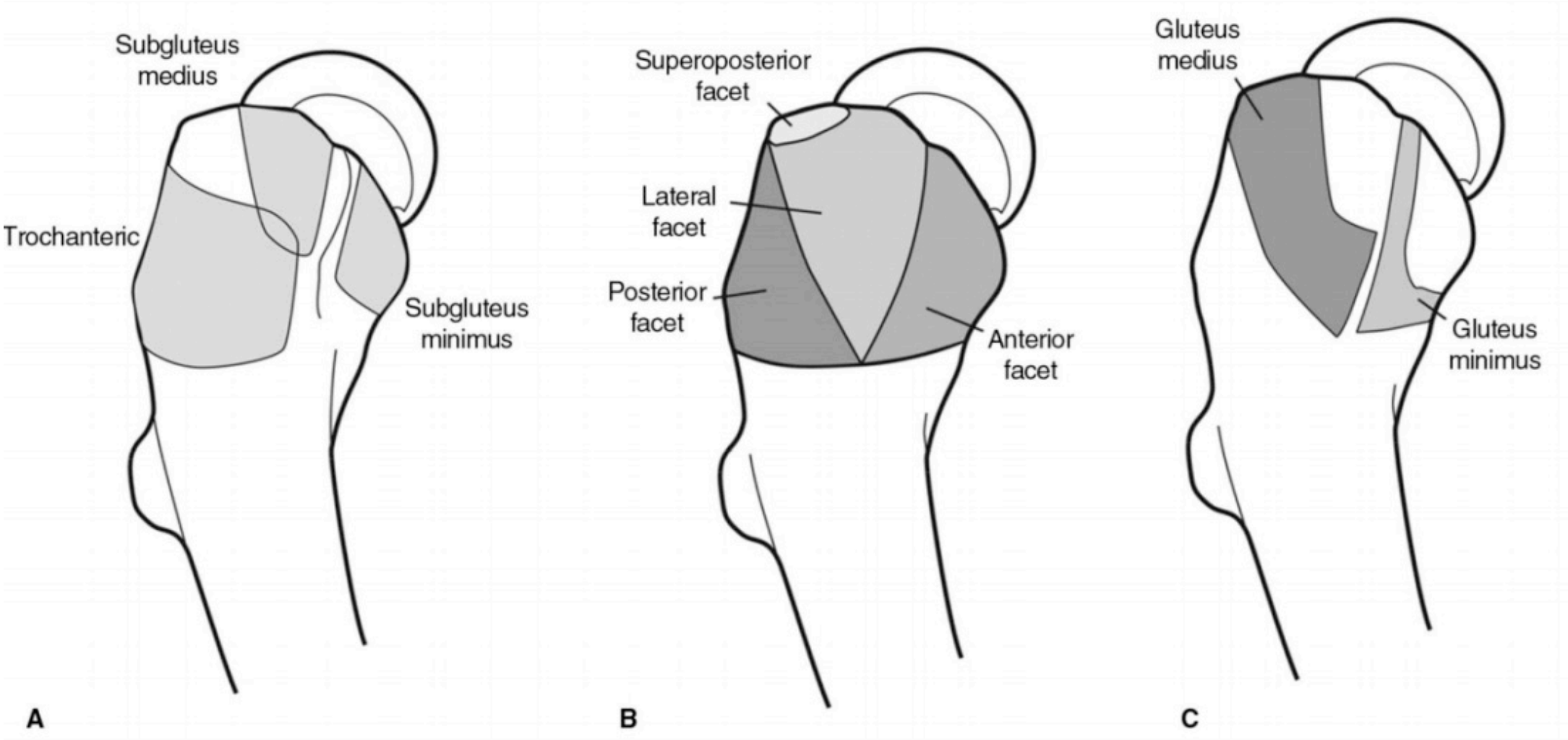
Extension and external rotation.

Stabilization of the pelvis.



PERITROCHANTERIC SPACE ANATOMY

Strauss EJ, Nho SJ, Kelly BT: **Greater trochanteric pain syndrome.** Sports Med Arthrosc 2010;18



THE GULTEAL MUSCLE FUNCTION

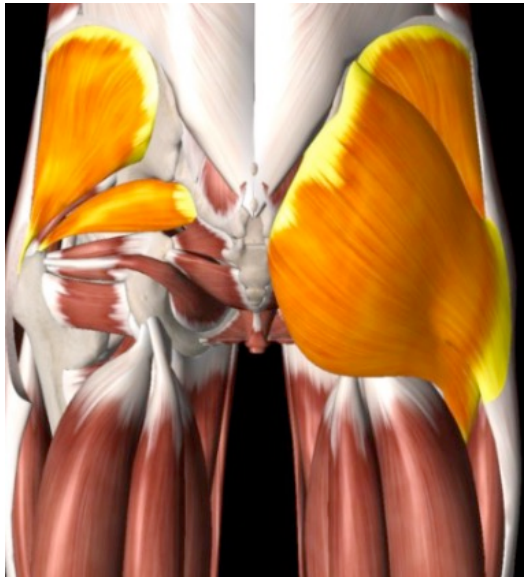
The GMed has three distinct parts, the anterior, middle and posterior. The muscle fibres of the anterior and middle segments are perpendicularly oriented, initiating hip abduction, while the posterior fibres of the GMed and GMin have a horizontal orientation, stabilizing the hip joint during gait

Allison K, Salomoni SE, Bennell KL, et al. **Hip abductor muscle activity during walking in individuals with gluteal tendinopathy**

THE GULTEAL MUSCLE FUNCTION

In patient with abductors tendinopathy, the gluteal tendons in GT may be under more sustained tensile load during early-mid stance when the hip reaches peak adduction angle.

Allison K, Salomoni SE, Bennell KL, et al. **Hip abductor muscle activity during walking in individuals with gluteal tendinopathy**



ABDUCTOR TENDINOPATHY EPIDEMIOLOGY

Historically under-reported under the term greater trochanteric pain syndrome (GTPS).

However, half of patients suffering from GTPS demonstrate gluteal tendinosis or ruptures.

Less than 20% have ultrasound-detected bursitis, which is usually a secondary feature.

Less than10% of patients suffer from bursitis without any other pathology.

More prevalent in women than men and demonstrates peak prevalence between the fourth and sixth decades of life.

The incidence of gluteal ruptures increased from 10% in the under the sixties to 50% in the over seventies groups and after the age of 70 years, the prevalence of tendinopathy can be over 80% and 60% can demonstrate partial tears.

Kong A, **MRI and US of gluteal tendinopathy in greater trochanteric pain syndrome.** Eur Radiol 2007.

Pierce TP, Issa K, **Abductor tendon tears of the hip.** JBJS Rev 2018.

Chi AS, Long SS. **Prevalence and pattern of gluteus medius and minimus tendon pathology and muscle atrophy in older individuals using MRI.** Skeletal Radiol 2015;

ABDUCTOR TENDINOPATHY
EPIDEMIOLOGY

MEDICOL

Risk factors:

Female: morphology of the female pelvis (coxa vara and greater trochanteric offset both potentially predisposing to greater compressive loading of the gluteal tendons

Age : over 40 years of age.

Lower back pain: the prevalence of gluteal tendinopathy in people with Low back pain has been reported to be as high as 35%.

leg-length discrepancy : an association with leg-length discrepancy has not been

demonstrated.

Trochanteric or femoral offset

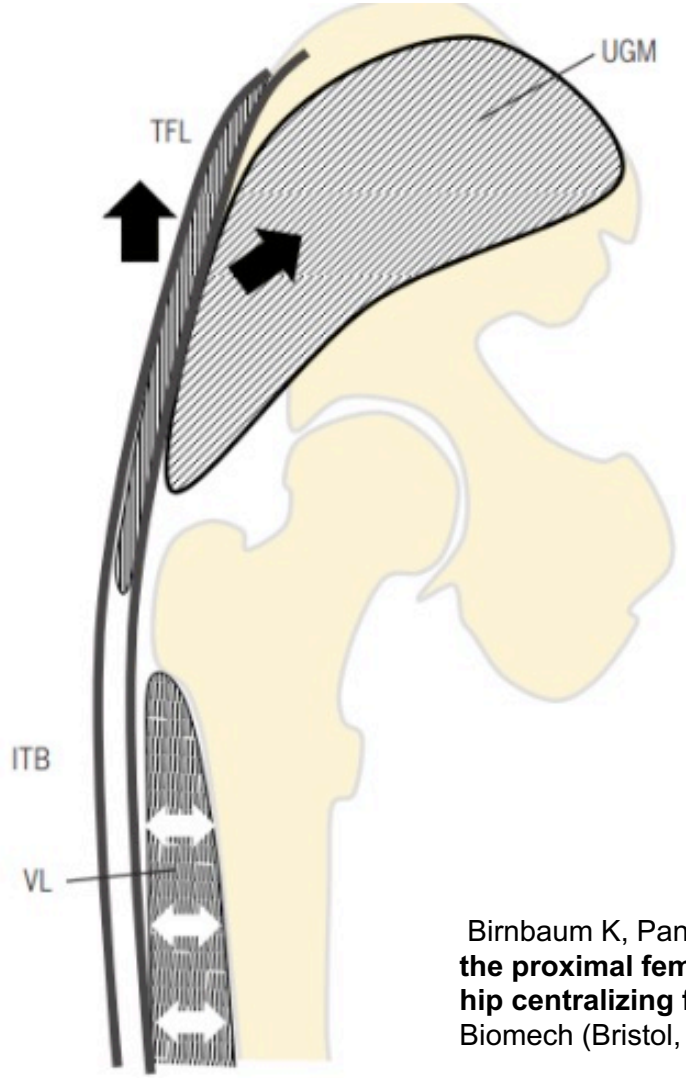
Kong A, **MRI and US of gluteal tendinopathy in greater trochanteric pain syndrome.** Eur Radiol 2007.

Pierce TP, Issa K, **Abductor tendon tears of the hip.** JBJS Rev 2018.

Chi AS, Long SS. **Prevalence and pattern of gluteus medius and minimus tendon pathology and muscle atrophy in older individuals using MRI.** Skeletal Radiol 2015;

PATHOMECANICS

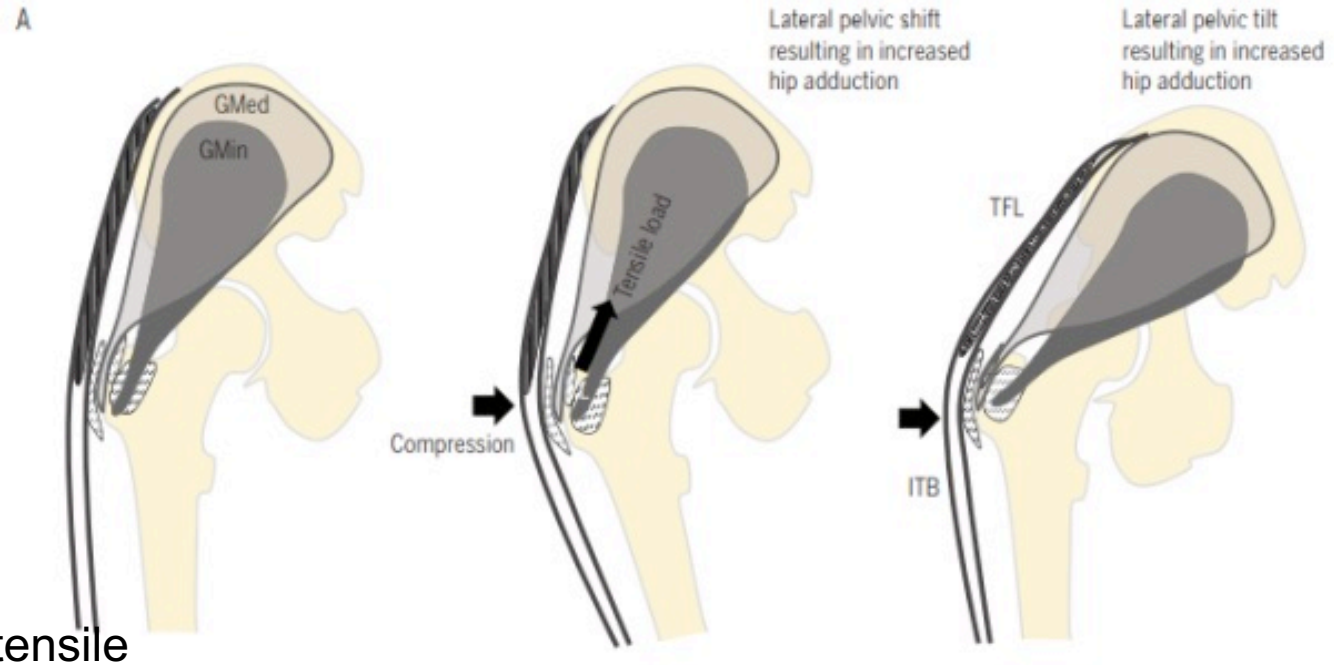
Trochanteric Abductors



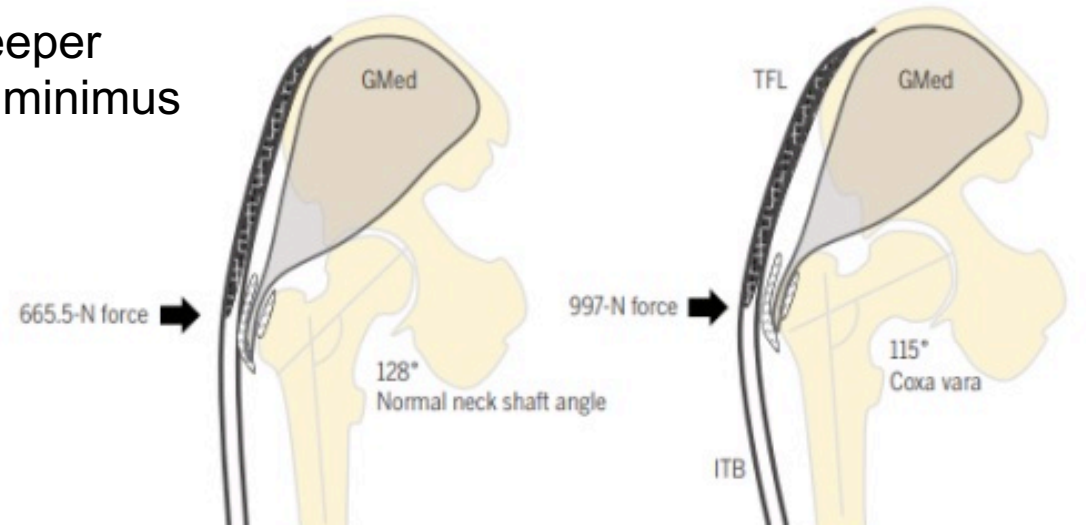
ITB Tensioners

Birnbaum K, Pandorf T**. Finite element model of the proximal femur under consideration of the hip centralizing forces of the iliotibial tract**. Clin Biomech (Bristol, Avon). 2011;

PATHOMECANICS



Compressive loads and relative shielding from tensile loads form pre-tensioning the iliotibial band
in adduction increase compressive load on the deeper regions of the tendons of the gluteus medius and minimus



Birnbaum K, **Finite element model of the proximal femur under consideration of the hip centralizing forces of the iliotibial tract**. Clin Biomech (Bristol, Avon). 2011;

FEMORAL OFFSET

- The femoral neck-shaft angle determines the size of the anatomical femoral offset and the force of abductor muscle.
- Lower NSA (Coxa vara) involves a higher femoral offset and a longer lever arm of the abductor muscles.
- Coxa valga: shorten the effective lever arm of the abductor muscles and reduced femoral offset.
- Coxa vaga correlate with a osteoarthritis of the medial compartment of the knee.

- Weidow et al. and
- Boissonneault et al, Osteoarthritis Cartilage. 2014.

PATHOMECANICS

Three distinct clinical scenarios have been described for abductor tendon tears.

1. chronic tears: found in the over 70-year-old age group,in patients with persistent lateral hip pain, non-responsive to conservative treatment.

2. atraumatic chronic tears of the anterior part: found unexpectedly during hip surgery and iatrogenic avulsion tears of abductor tendons following THA using a transgluteal approach.

3. Traumatic tears in young adults.

CLINICAL PRESENTATION

lateral thigh pain aggravated by lying on the affected limb, walking or climbing stairs.

Pain radiating over the fascia lata.

Tenderness over the superior and is typically found on examination.

Anterior groin pain is less common.

Slight or moderate limp and a positive Trendelenburg sign (sensitivity and specificity of between 73% and 76%, to diagnose abductor tendon tears, respectively).

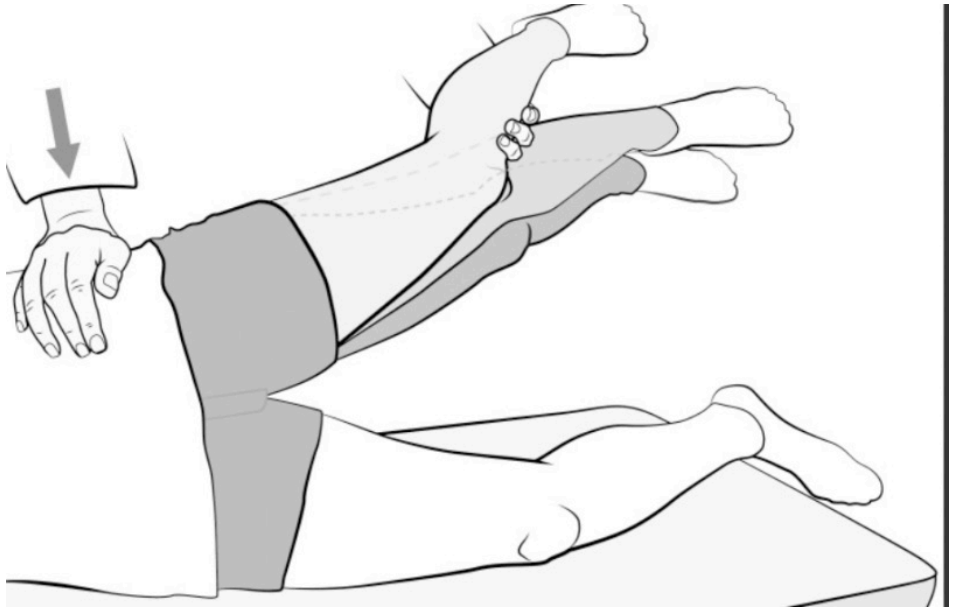
increased adduction in single leg stance before lift-off and lowered contralateral hemipelvis position in patients with symptomatic gluteal tendinopathy

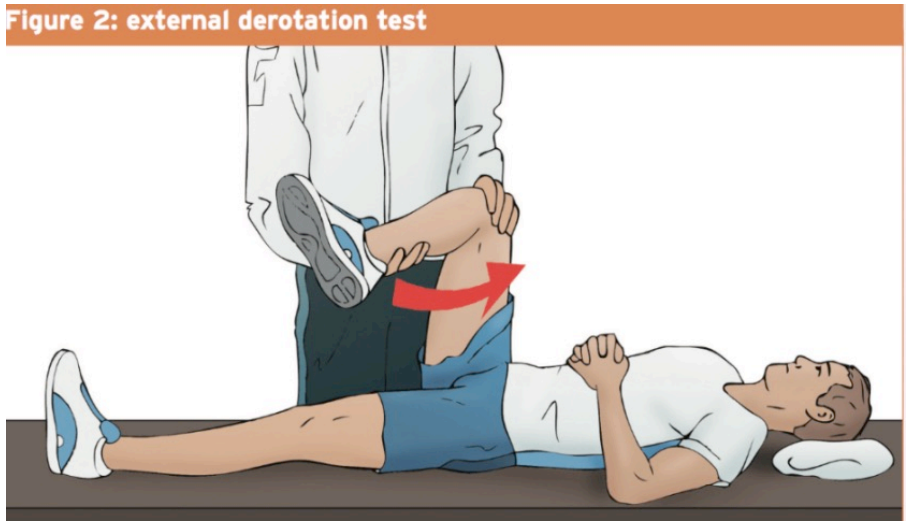
CLINICAL PRESENTATION

Hip lag sign demonstrated sensitivity and specificity of 89% and 96% respectively for abductor tendon ruptures, insufficiency and tendinopathy.

The 30-second single leg stance test

Resisted external derotation test in supine position had a sensitivity of 100% and 88% respectively and specificity of 97.3% in diagnosing gluteal tendinopathy





IMAGING

Magnetic resonance imaging (MRI) is the gold-standard examination in evaluating abductor muscles and tendon anatomy.

TREATMENT

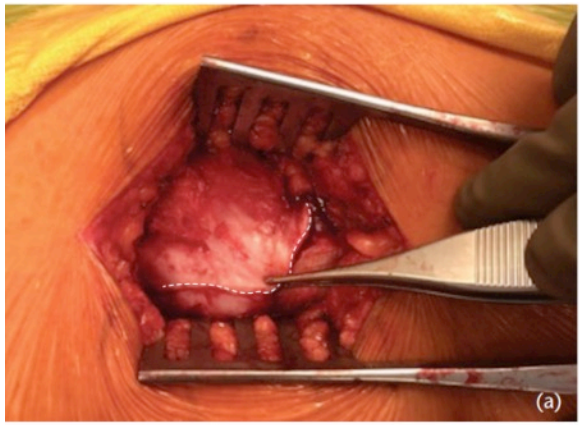
Initial treatment of abductor tendon pathology is conservative and can include short-term use of non-steroidal antiinflammatory medications, activity modification, physical therapy and local injections of corticosteroid plus anaesthetic into the trochanteric bursa.

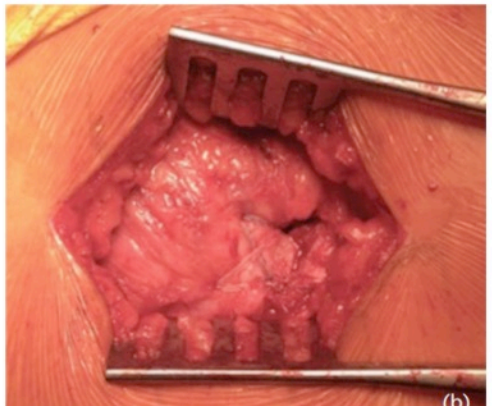
If conservative management fails to relieve the symptoms after three months of

therapy, surgical treatment may follow

SURGICAL TREATMENT

Direct open or endoscopic non-augmented repair using bone tunnels or suture anchor.





MEDICOL

Merci de votre attention