

A visual guide to surface anatomy

General Anatomy

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The ligaments and bursae



Ligaments

□ Ligaments

- The annular ligament of the radius
- The inguinal ligament
- The medial and collateral ligament of the knee
- The pes anserinus tendon complex
- The lateral collateral ligament of the knee
- The patella ligament
- The deltoid or medial tibio-talar calcaneal ligament of the ankle
- The lateral ligaments of the ankle
- The iliolumbar ligament

□ Bursae

- The subacromial bursa
- The olecranon bursa
- The pre-patella bursa
- The pes anserine bursa
- The popliteal bursa (or Baker's cyst)
- The trochanteric bursa
- The psoas bursa
- The metatarsal-phalangeal bursa of the big toe

Video resources

The ligaments:

<https://www.youtube.com/watch?v=ul201jDqdOw&t=55s>

The bursae:

https://www.youtube.com/watch?v=9p0IH1_odgE

Assessment questions

LIGAMENTS

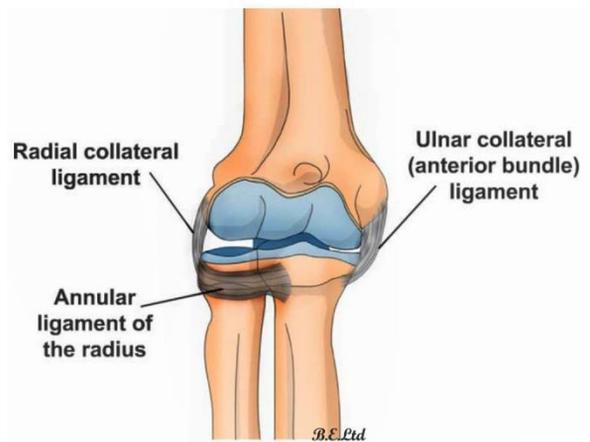
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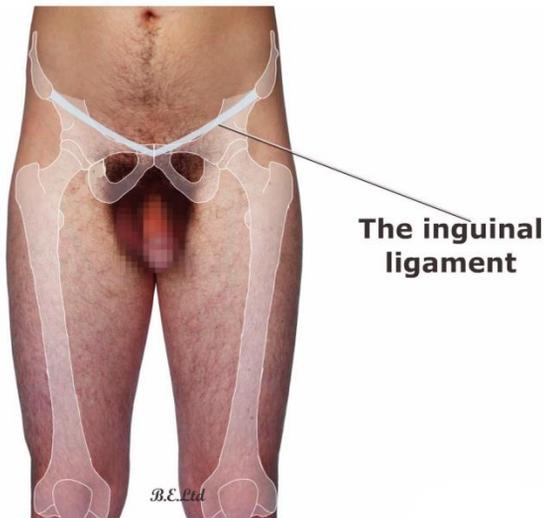
The Annular Ligament of the Radius

- The annular ligament (or orbicular ligament) is a strong band of fibers, which encircles the head of the radius, and retains it in contact with the radial notch of the ulna.
- The ligament may be palpated indirectly through the muscles of the lateral aspect of the upper forearm just below the elbow joint.
- Use a firm gripping action with your thumb and index finger whilst with your other hand pronates and supinates the forearm.
- Also by exerting a distractive and compressive force through the radius you may feel the movement of the radial head in relation to the annular ligament.

Ligaments of the elbow



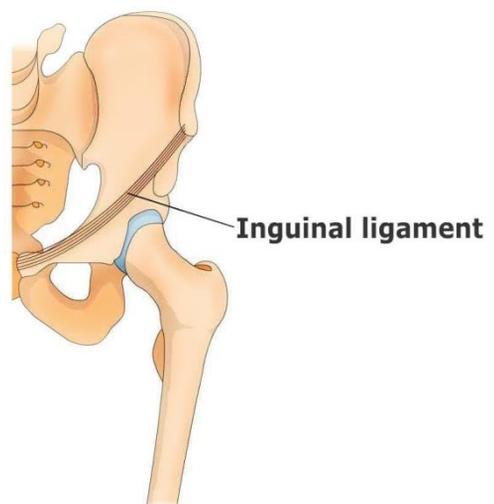
The inguinal ligament



The Inguinal Ligament

- It is formed by the aponeurosis of the external abdominal oblique muscle.
- It extends between the anterior superior iliac spine and the pubic tubercle as a thick band and is continuous with the fascia lata of the thigh.

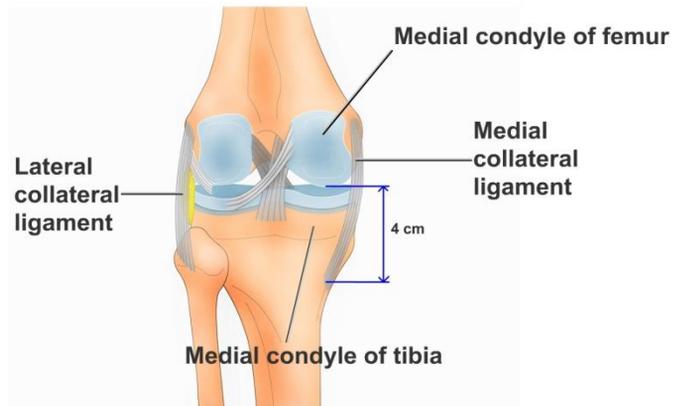
The pelvis



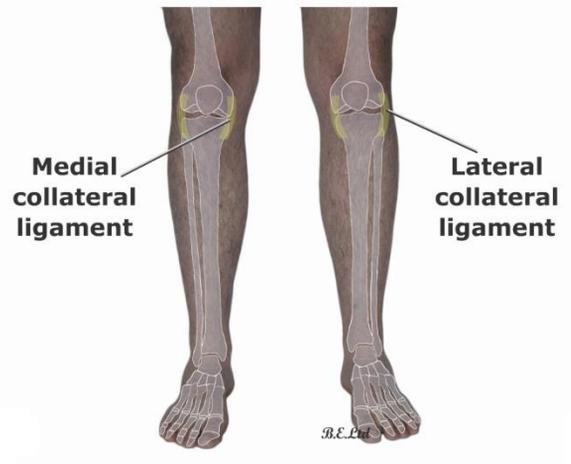
The Medial Collateral Ligament of the Knee

- It is a broad, flat, band, situated slightly posterior on the medial side of the knee joint.
- It is attached proximally to the medial condyle of femur immediately below the adductor tubercle
- It spans the medial aspect of the knee joint to attach below the medial condyle of the tibia approximately 4 cm distal to the joint line.
- The deep component of the medial collateral ligament fibers originate from the medial joint capsule and are attached to the medial meniscus.
- The fibers of the posterior part of the ligament are short and incline backward as they descend; they are inserted into the tibia above the groove for the semimembranosus muscle.
- The anterior part of the ligament is flat and about 10 centimetres long, which inclines forward as it descends. It is inserted into the medial surface of the body of the tibia about 2.5 centimetres below the level of the tibial condyle.

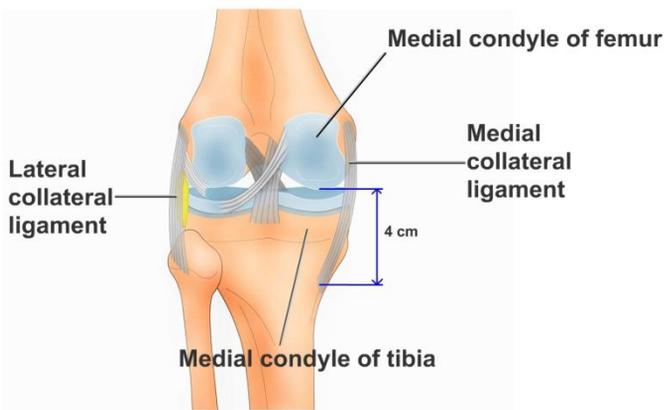
Ligaments of the knee



Collateral ligaments of the knees



Ligaments of the knee



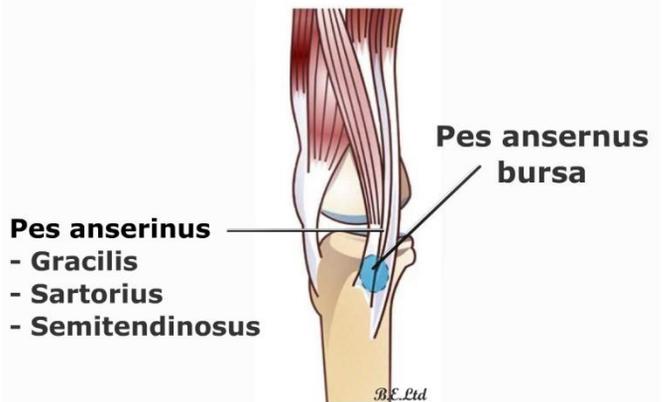
The Lateral Collateral Ligament of the Knee

- The lateral collateral ligament (or the fibular collateral ligament) is part of a complex of ligaments collectively named the posterolateral corner.
- The lateral collateral ligament is separated from the lateral meniscus by a fat pad.
- The lateral collateral ligament is rounded, more narrow and less broad than its medial counterpart. It stretches obliquely downward and backward from the lateral epicondyle of the femur to the head of the fibula below.
- In contrast to the medial collateral ligament, it is fused with neither the capsular ligaments nor the lateral meniscus.
- Both collateral ligaments are taut when the knee joint is in extension.

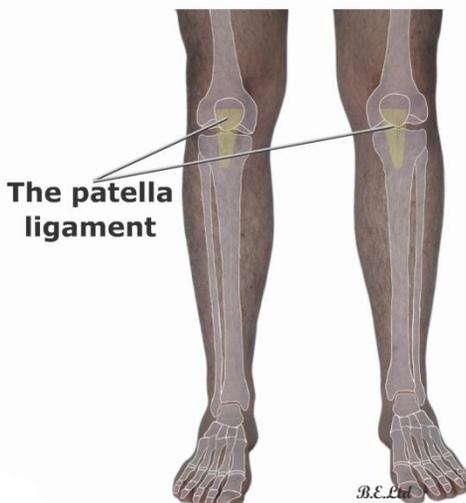
The Pes Anserinus Tendon Complex

- Crossing on top of the lower part of the medial collateral ligament is the pes anserinus tendon complex. These are the joined tendons of the sartorius, gracilis, and semitendinosus muscles.
- A bursa lies between the medial collateral ligament and the pes anserinus.

Pes anserinus and bursa



The patella ligament

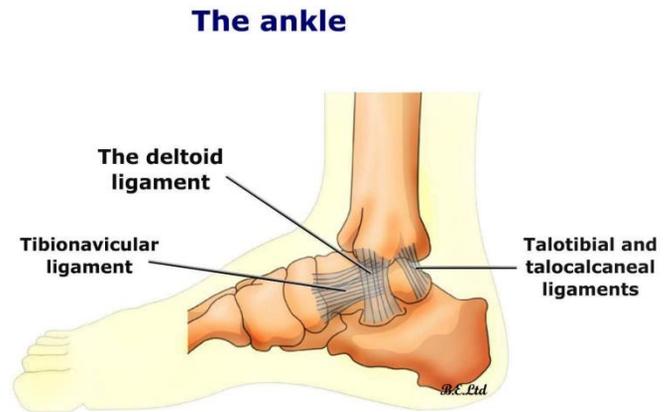


The Patella Ligament

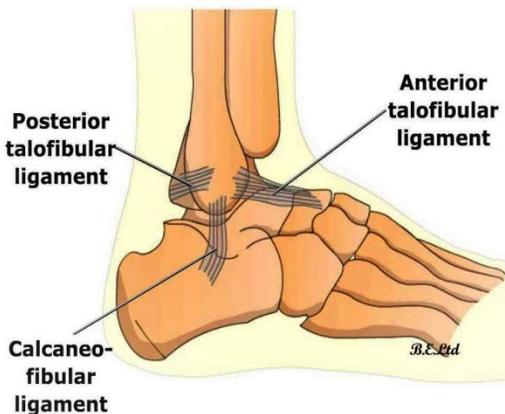
- The patella ligament is best demonstrated with the knee at 90 degrees flexion so that the ligament becomes taut and prominent.
- It starts from the pointed inferior border of the patella and connects to the tibial tuberosity.
- Placing modest pressure with your thumb demonstrates a springy sensation.

The Deltoid or Medial Tibio-Talar or Calcaneal Ligament of the Ankle

- The medial ligament of the talocrural joint (or deltoid ligament) is a strong, flat, triangular band.
- It is attached above the apex of the medial malleolus over its anterior and posterior borders.
- It consists of two sets of fibres; superficial and deep.
- Place the foot in eversion to tense the medial ligament and start with your thumb to palpate just below the medial malleolus starting from the posterior fibres of the calcaneal attachments or until you reach the more anterior fibres of the tibio-navicular ligament.



The ankle Lateral aspect

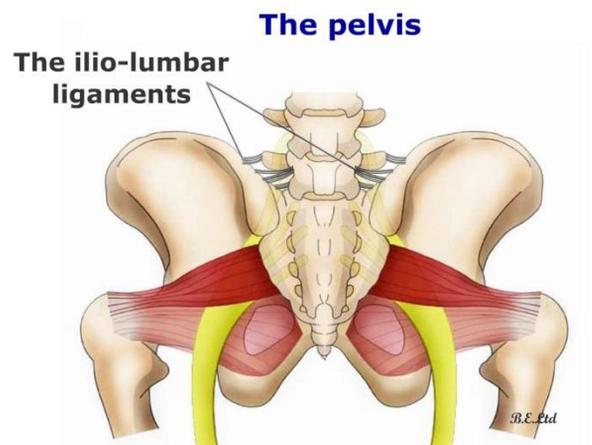


The Lateral Ligaments of the Ankle

- The lateral ligaments of the ankle are divided into three:
 - Anterior superficial talofibular ligament
 - Posterior talofibular ligament
 - Calcaneofibular ligament
- Place the ankle in inversion and with your thumb feel each ligament in turn.

The Iliolumbar Ligament

- This is attached to the posterior superior surface of the ilium, approximately one inch lateral and superior to the posterior inferior iliac spine.
- The deep portion of the ligament is not palpable, but the superficial portion is. It is best to place the patient in a prone position.
- It is not easy to palpate it as it is embedded in layers of muscle and fascia and its iliac attachment lies on the deep inner surface of the ilium below the level of the iliac crest.
- To palpate this tissue indirectly, exert firm pressure along the border of the iliac crest about an inch lateral to the PSIS and move towards the tips of the transverse processes of L5 and sometimes over L4.



Bursae

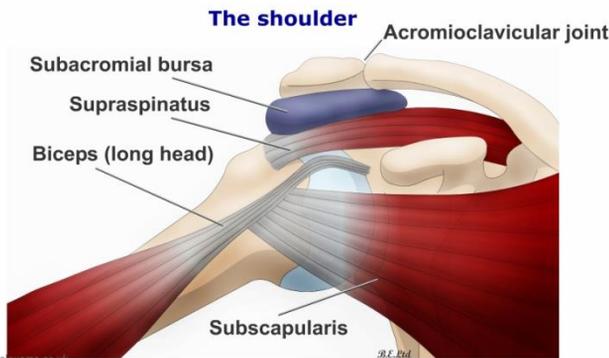
□ Bursae

- The subacromial bursa
- The olecranon bursa
- The pre-patella bursa
- The pes anserine bursa
- The popliteal bursa (or Baker's cyst)
- The trochanteric bursa
- The psoas bursa
- The metatarsal-phalangeal bursa of the big toe

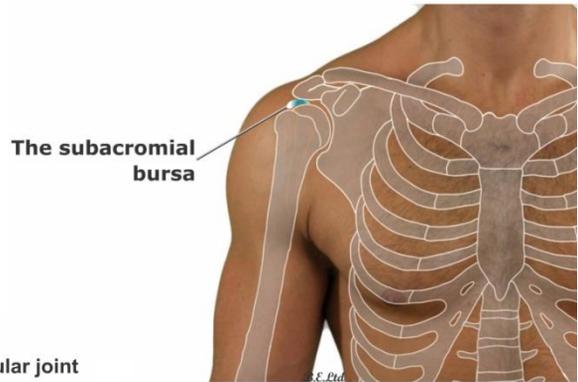
Bursae are small fluid-filled sacs lined by a serous synovial membrane. The inner layer is capillary-rich producing viscous synovial fluid. They provide a cushion between bones and tendons or between bones and muscles, mostly found near synovial joints. They help to reduce friction during movement or to cushion bony prominences. Normally they are not palpable but when inflamed are easy to identify.

The Sub-Acromial Bursa

- The subacromial bursa is located just below the acromion.
- The capsule extends above the humeral head to form a bursa between the humeral head and the overlying acromial process.
- This is often the site of pathology resulting in impingement of the shoulder.



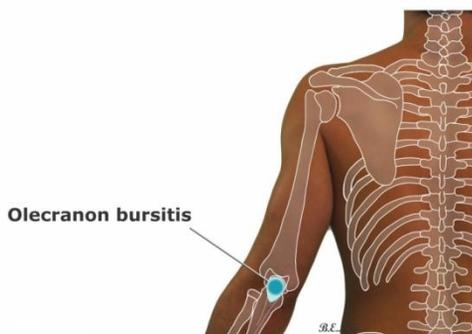
The subacromial bursa



The Olecranon Bursa

- This bursa is located over the extensor aspect of the extreme proximal end of the ulna. In common with other bursae, it is in the normal state invisible and impalpable.
- Place the arm in a relaxed 90° position and feel over the olecranon process.
- You may repeat this with the elbow in extension as the tissues will become loose and easier to pinch within your fingers.

Olecranon bursitis



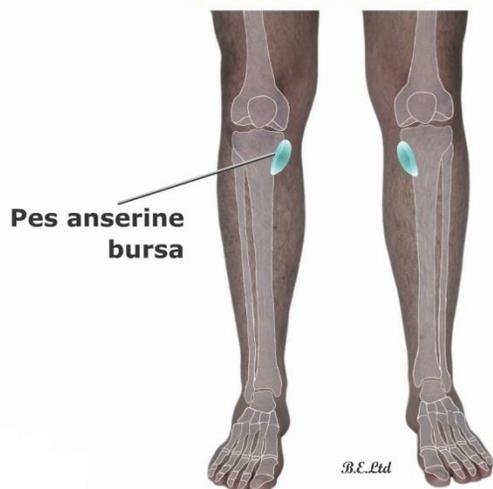
The Pre-Patellar Bursa

- The prepatellar bursa is a frontal bursa of the knee joint.
- It is a superficial bursa with a thin synovial lining located between the skin and the patella.
- In the supine patient, place a small pillow under the knee to introduce some flexion and with the pads of your fingers feel the anterior surface of the patella.

Pre-patella bursa



Pes anserine bursa



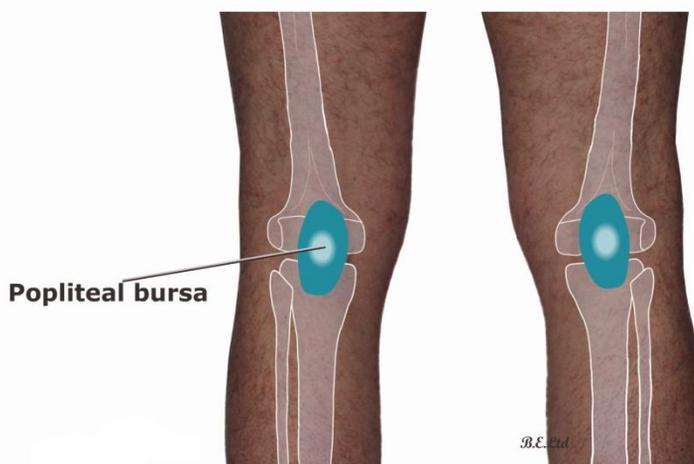
The Pes Anserine Bursa

- The pes anserinus “ or goose's foot” tendon complex is made up of the tendons of sartorius, gracilis and semitendinosus.
- This tendon complex attaches onto the anteromedial surface of the proximal extremity of the tibia.
- The conjoined tendon lies superficial to the tibial insertion of the medial collateral ligament of the knee.
- The pes anserine bursa is located between these tendons and the medial collateral ligament.

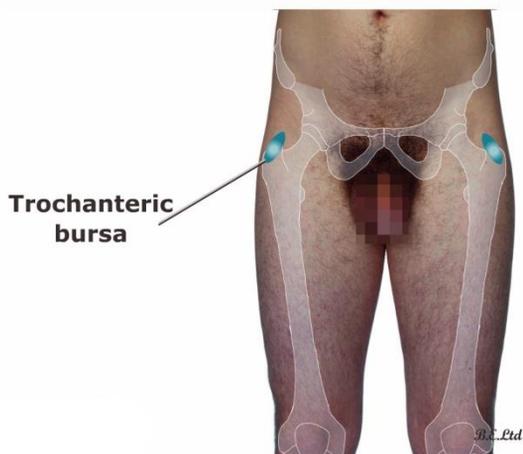
The Popliteal Bursa or Baker's Cyst

- Also referred to as gastrocnemio-semimembranosus bursa. Is a prolongation of the synovial tendon sheath of the popliteus muscle outside the knee joint into the popliteal space.
- With the knee joint relaxed in semiflexed position and supported with both hands use your fingertips to feel the popliteal fossa.
- Feel especially the posterior and superior aspect of the medial condyle of the femur. It is not normally palpable unless inflamed.

Popliteal bursa



Trochanteric bursa



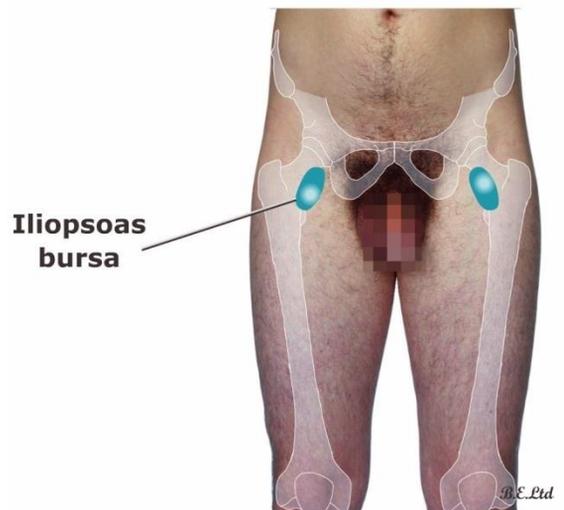
The Trochanteric Bursa

- There may be one or more. This bursa is situated adjacent to the femur, between the insertion of the gluteus medius and gluteus minimus muscles into the greater trochanter of the femur and the femoral shaft.
- To make the location of the greater trochanter more prominent ask the patient to rotate the hip along its long axis with your hand placed flat over the lateral aspect of the hip.

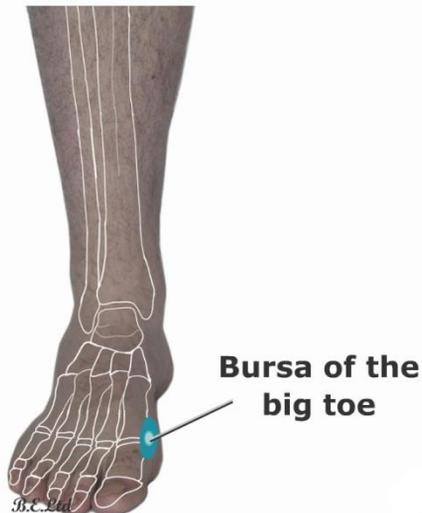
The Psoas Bursa

- The iliopsoas bursa lies between the musculotendinous junction and the pelvic brim.
- This bursa is the largest in the body and may extend proximally into the iliac fossa or distally as far as the lesser trochanter.
- Communication between this bursa and the hip joint occurs in appx 15% of all adults.

Iliopsoas bursa



The metatarsal-phalangeal bursa of big toe



The Metatarsal-Phalangeal Bursa of the Big Toe

- This is located in the medial aspect of the first metatarso-phalangeal joint.
- To identify the joint line flex and extend the big toe.
- Palpate along the medial and superior aspect of the metatarso-phalangeal joint and over the distal head of the first metatarsal.

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Wikipedia online encyclopaedia

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Illustrations, graphic design and photography: Annabel King, Pascalis Spyrou

Clinical editors: Charles Goillandeau, Claire Rother, Katie Stock, Euan MacLennan

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