

# Baker's cyst (Popliteal cyst)

## What is a Baker's cyst?

A Baker's cyst (also known as a popliteal cyst) is a fluctuant swelling located in the popliteal space. The term is a misnomer, as the swelling is the result of synovial fluid distending the gastrocnemio-semimembranosus bursa, rather than being a true cyst. In older patients it is commonly part of a chronic knee joint effusion which herniates between the two heads of the gastrocnemius and is most commonly secondary to degenerative or meniscal pathology.

Primary cysts have not been found to communicate directly with the knee joint. These cysts usually occur in young people and are symptomless.

Secondary cysts communicate freely with the knee joint and contain fluid of normal viscosity. They are thought to be caused by a combination of weakness around the knee, internal pathology and valvular opening between the knee joint and bursa. These types of cysts occur in older people, often cause symptoms and are associated with underlying articular disorders. Secondary cysts are more common than primary cysts.

## Epidemiology

- The reported incidence and prevalence vary greatly depending on the type of imaging used.
- One study found that around 25% of patients with knee pain had a Baker's cyst which was diagnosed by ultrasound<sup>[1]</sup>.
- There are two age-incidence peaks between 4 to 7 years and 35 to 70 years.
- There is no predilection for race or sex.

- The most common conditions associated with Baker's cyst are [osteoarthritis](#), [rheumatoid arthritis](#) and [juvenile rheumatoid arthritis](#) <sup>[2]</sup> .
- In adults, the aetiology of Baker's cyst may be related to an inflammatory process, meniscal tears or mechanical intra-articular derangements of the knee joint <sup>[3]</sup> .

## Baker's cyst symptoms

Baker's cysts may present as either a chronically persistent or relapsing condition or as an acute and dramatic condition that can occur in the case of cyst rupture presenting as pseudothrombophlebitis.

- Popliteal mass: this is the most common presenting symptom.
- Pseudothrombophlebitis syndrome: this is a syndrome in which symptoms simulate those of deep venous thrombosis (DVT).
- Thrombophlebitis: the anatomical site of a Baker's cyst means that there can be an increased risk of thrombophlebitis.
- Other presentations include aching, knee effusion, clicking of the knee, buckling of the knee and locking.
- Occasionally the cyst can rupture, resulting in pain and swelling of the calf.

**Exclude a DVT in patients with Baker's cyst and leg swelling.**

## Examination

- This may reveal a transilluminable swelling in the posteromedial aspect of the knee.
- Foucher's sign can often be demonstrated, in which the swelling becomes tense on extension and soft on flexion.
- Many patients with Baker's cysts without symptoms at the popliteal fossa do not have any signs of a Baker's cyst on examination <sup>[4]</sup> .
- Overlying skin changes may suggest a superficial haemangioma, lymphangiosarcoma, dermatofibrosarcoma or Kaposi's sarcoma.

**NB:** a patient with a sudden increase in size of lump, change in consistency, increased pain and/or neurovascular compromise are all red flags that indicate a need for an urgent specialist assessment<sup>[2]</sup> .

## Differential diagnosis

- [DVT](#).
- Vascular masses - popliteal artery aneurysm, cystic adventitial degeneration of popliteal artery (Erdheim's mucoid degeneration), haemangioma.
- Inflammatory arthritides.
- [Septic arthritis](#).
- Postoperative changes (seroma, haematoma, abscess).
- Haemophilic arthropathy.
- Benign soft tissue tumour - peripheral nerve sheath tumours (neurolemmoma).
- Malignant - myxoid liposarcoma (adults), lipoblastoma (children, especially aged <5 years), lymphangiosarcoma, dermatofibrosarcoma, Kaposi's sarcoma, rhabdomyosarcoma.
- Meniscal cyst (occurs more commonly laterally but medial cysts have been identified).
- Ganglion cyst.
- [Traumatic tear of the gastrocnemius muscle](#).

## Investigations

- Ultrasound scan - differentiates purely cystic masses from more solid lesions and can exclude a DVT. It may also be used to evaluate the cyst's internal structures, exclude other lesions and assess its relationship to other structures<sup>[5]</sup> .
- Musculoskeletal ultrasound is often regarded as a diagnostic tool for ruptured popliteal cyst<sup>[6]</sup> .

- MRI scan – allows a more precise location of the cyst and for a complete evaluation of the internal structures of the knee. It may be helpful in cases of diagnostic difficulty (particularly to exclude malignancies) and to assess a potential concomitant intra-articular disorder or prior to surgery.
- MRI imaging is becoming the imaging modality of choice in many centres<sup>[7]</sup>.

## Baker's cyst treatment

Baker's cyst treatment depends on the underlying cause.

- If the cyst is asymptomatic, no treatment may be necessary. Spontaneous resolution is common, particularly in younger age groups. It may, however, take 10–20 months.
- Patients with a Baker's cyst and calf swelling should be referred urgently for an ultrasound scan to exclude a DVT.
- Non-steroidal anti-inflammatory drugs, ice and assisted weight-bearing may help with symptoms whilst spontaneous resolution is awaited.
- Aspiration is sometimes undertaken, occasionally with instillation of corticosteroid. The steroid appears to be more effective when injected into the Baker's cyst directly compared to injected into the joint<sup>[8]</sup>.
- Arthroscopic treatment of underlying knee arthropathy has had lasting resolution of an associated Baker's cyst<sup>[9]</sup>.
- Indications for Baker's cyst excision include cases in which the popliteal cyst does not respond to conservative treatment or arthroscopic intervention or cases in which an underlying cause cannot be found<sup>[10]</sup>. Surgery may be done as an open technique or laparoscopically.
- Combining different treatments for patients with Baker's cysts associated with osteoarthritis has been shown to improve symptoms more than when only one treatment has been given<sup>[11]</sup>.

# Complications

- Rupture or dissection of fluid into the adjacent proximal gastrocnemius muscle belly is the most common complication, resulting in a clinical picture which looks very much like a DVT (pseudothrombophlebitis syndrome).
- Haemorrhage into a cyst has been reported, particularly if there is concomitant bleeding diathesis (eg, [haemophilia](#)).
- Infection can occur rarely.
- Compartment syndrome is a very rare complication caused by ruptured and non-ruptured Baker's cysts<sup>[12]</sup>.
- Trapped, loose calcified bodies in Baker's cysts may occur. They may derive from trauma, arthropathy or synovial osteochondromatosis.
- Pressure from the cyst on the common peroneal and tibial nerves has been reported<sup>[13]</sup>.

## Baker's cyst prognosis

Baker's cyst prognosis depends on whether there is any underlying knee pathology, how treatable it is and the age of the patient at presentation. Simple Baker's cysts in children and young adults usually resolve spontaneously<sup>[14]</sup>.

Recurrence may occur after treatment. However, it is less likely after some types of arthroscopic excision<sup>[15]</sup>.

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