

Massive Ecchymosis on the Calf Caused by Ruptured Popliteal Cyst

Rüptüre Popliteal Kistin Neden Olduğu Baldırda Masif Ekimoz

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ABSTRACT Baker's cyst is a synovial cyst of the popliteal fossa. Baker's cyst rupture is a complication of Baker's cyst that should be diagnosed early and problems that may occur secondary to this complication should be prevented. If the cyst ruptures and extends into the calf, swelling, erythema, ecchymosis, distal edema, and a positive Homans sign may occur. Baker's cyst rupture may mimic thrombophlebitis or deep vein thrombosis. In this case report, the rupture of Baker's cyst, which was detected in a patient who presented with severe calf pain and massive ecchymosis on the calf, is presented. When a patient has extensive ecchymosis on the calf, it should be kept in mind that even though he or she has not previously been diagnosed with a Baker's cyst, the Baker's cyst may have ruptured and ruptured cyst may lead to complications such as compartment syndrome that require immediate intervention.

Keywords: Case report; popliteal cyst; pain; calf; ecchymosis

ÖZET Baker kisti, popliteal fossanın sinoviyal kistidir. Baker kistinin erken teşhis edilmesi gereken ve sekonder problemlere neden olabilecek önemli bir komplikasyonu Baker kisti rüptürüdür. Kist rüptüre olur ve baldırda yayılırsa şişlik, eritem, ekimoz, distal ödem ve pozitif Homans bulgusu oluşabilir. Baker kistinin rüptürü tromboflebit veya derin ven trombozunu taklit edebilir. Bu olgu sunumunda, şiddetli baldır ağrısı ve baldırda masif ekimoz ile başvuran bir hastada saptanan Baker kistinin rüptürü sunulmuştur. Baldırda yaygın ekimoz olan bir hastada daha önce Baker kisti tanısı alınmış olsa bile Baker kistinin rüptüre olabileceği ve kistin yırtılmasının acil müdahale gerektiren kompartman sendromu gibi komplikasyonlara yol açabileceği akılda tutulmalıdır.

Anahtar Kelimeler: Olgu sunumu; popliteal kist; ağrı; baldır; ekimoz

Baker's cyst, which is seen in the presence of an intra-articular pathology or in inflammatory or degenerative processes, is mostly a chronic condition, however, when a Baker's cyst ruptures, it is seen as an acute condition.¹ Swelling and severe pain in the calf are symptoms of a ruptured Baker's cyst. Some cases have revealed that ecchymosis in the foot, calf, or popliteal fossa can indicate Baker's cyst rupture.¹⁻⁴ If the Baker's cyst which causes alone compression on the vessels and nerves in the popliteal fossa ruptures, the risk of compression and/or compartment

syndromes increases highly.¹⁻⁸ The massive ecchymosis in the presented case is a catastrophic manifestation of the rupture of a Baker's cyst.

CASE REPORT

A 57-year-old female patient presented with a chief complaint of severe pain and extensive bruising in her right calf. The onset of symptoms occurred one week prior when she experienced a sudden and sharp pain in the calf while carrying a heavy water can. Her

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Peer review under responsibility of Journal of Physical Medicine and Rehabilitation Science.

Received: 01 May 2023 **Received in revised form:** 18 Jun 2023 **Accepted:** 20 Jul 2023 **Available online:** 18 Aug 2023

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pain progressively worsened, became continuous, and was accompanied by difficulty walking. The patient had no significant medical history or regular medication. There was no reported history of trauma history to the affected limb.

Upon physical examination, painful swelling and increased warmth were observed in the right calf. Measurements taken 15 cm below the midpoint of the patella revealed a 4 cm greater circumference in the right calf compared to the left (Figure 1).

In the examination of the right lower extremity range of motion, passive movements were unlimited and painless; however, active knee movements and ankle dorsiflexion were restricted due to calf pain. Peripheral pulses were palpable in both the upper and lower extremities.

Laboratory investigations yielded normal results with no evidence of pathology. Hemogram, blood coagulation parameters, liver function tests and kidney function tests all showed no abnormalities. Acute phase reactants were within the normal range. All deep veins of the right leg were patent and compressible on color Doppler ultrasound and ultrasonography showed a ruptured Baker's cyst (Figure 2).

Rest, elastic bandage, and cold pack application were recommended to the patient, and a non-steroidal anti-inflammatory drug was prescribed. One week after the recommendations, a significant regression was achieved in the patient's complaints. The clinical follow-up of the patient continues.

Written informed consent was obtained from the patient. All procedures in this case report were carried out in accordance with the latest version of the World Medical Association Declaration of Helsinki and the Good Clinical Practices Guidelines published by the Ministry of Health.

DISCUSSION

Although Baker's cyst rupture is a well-known complication of Baker's cyst, extensive ecchymosis as a clinical manifestation of a ruptured Baker's cyst is rarely reported in the literature. Early diagnosis of Baker's cyst rupture is of clinical importance in terms of preventing rupture complications.

Baker's cyst, which is a synovial cyst of the popliteal fossa, was defined by Robert Adams in 1840 and William Marrant Baker in 1867.⁹ In adults, Baker's cyst is most common between the ages of 35 and 70, and its incidence increases with age.⁶

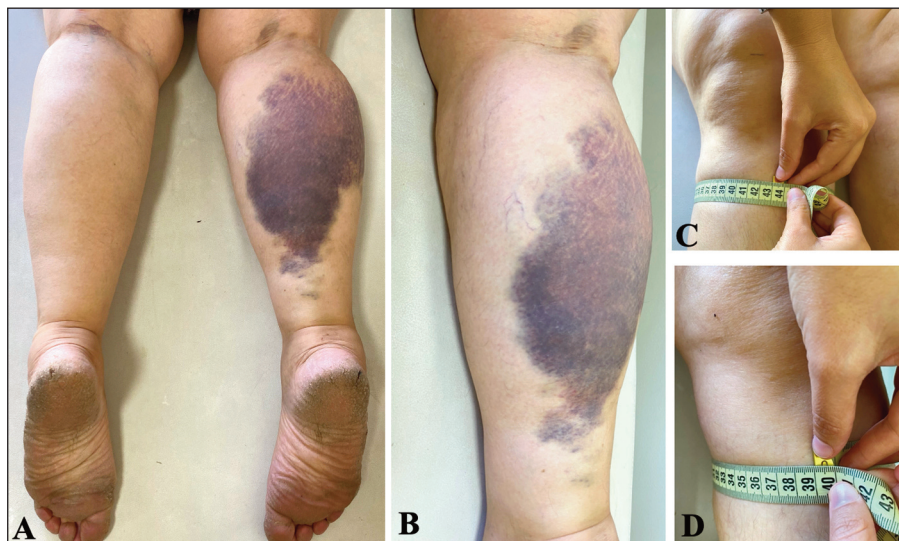


FIGURE 1: Physical examination of unilateral leg swelling and extensive bruising was noted in the patient's right calf (A, B). Right (C) and left (D) calf circumference measurements.

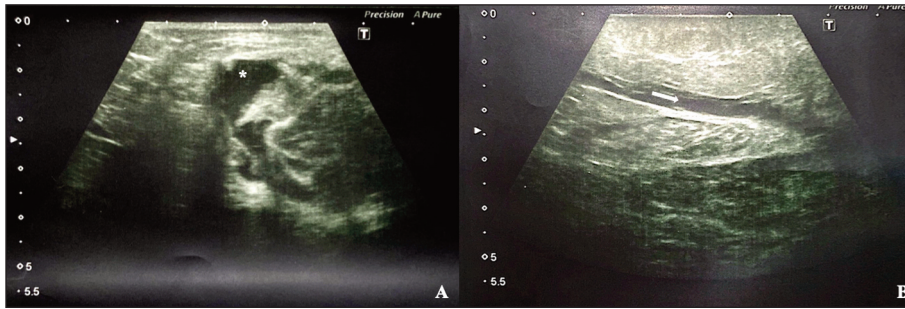


FIGURE 2: **A)** Transverse view of the popliteal fossa. Note the image of the ruptured Baker's cyst (asterisk). **B)** Longitudinal view of the right calf. The longitudinal sonogram shows the Baker's cyst (arrow) which extends caudally.

A Baker's cyst, either on its own or when it ruptures, has the potential to compress the popliteal artery, leading to ischemic pain, claudication, and pseudothrombophlebitis due to venous compression. In some cases, this can progress to thrombosis and thromboembolism. Additionally, the cysts can also compress the peroneal, tibial, or sciatic nerves resulting in neuropathy.^{5-8,10-12} Considering these factors, it is crucial to consider Baker's cyst in patients with symptoms of neuromuscular or vascular dysfunction in the distal lower extremity.

Rupture of a Baker's cyst can lead to serious problems, and it is considered a potentially life-threatening complication. Therefore, prompt identification and appropriate management of a ruptured Baker's cyst are essential to ensure patient safety and prevent further complications.

If the cyst ruptures and extends into the calf, swelling, erythema, ecchymosis, distal edema, and a positive Homans sign may occur. With these findings, the rupture of a Baker's cyst may mimic thrombophlebitis or deep vein thrombosis.^{3,6} In the case presented, the patient experienced pain and extensive bruising in the calf, which served as an indication of rupture.

Baker's cyst rupture increases the risk of occlusion on the popliteal artery and vein or may cause compression neuropathy by compressing the tibial nerve.^{4,6} Neurovascular compression syndromes are frequently seen in conditions in which a Baker's cyst ruptured and caused compartment syndrome which is an emergency.⁷ Anterior compartment syndrome

presents with swelling of the anterolateral part of the calf and the foot drop. Posterior compartment syndrome is characterized by swelling in the calf, plantar sensation defect, distal muscle weakness, and worsening complaints by thumb extension.⁶ Compartment syndrome leads to muscle death and loss of limbs. For this reason, compartment syndrome is an emergency clinical condition.⁷ In this case, the detection of Baker's cyst rupture, performed without inducing compartment syndromes, along with subsequent treatment and patient monitoring, effectively prevented the development of such syndromes.

A Baker's cyst is palpable when examined with the knee in full extension and disappears when the knee is flexed. In cases where Baker's cyst cannot be detected by physical examination or neurovascular pathologies should be investigated, imaging is required. Ultrasonography, which is one of the imaging methods, allows to evaluate the neurovascular pathologies as well as to examine the Baker's cyst. Ultrasound is advantageous in that it enables rapid differential diagnosis without radiation.^{6,7} In the presented case, ultrasound imaging has enabled the rapid diagnosis of Baker's cyst rupture.

In the adult population, popliteal cysts are more commonly associated with arthritic conditions or internal derangement within the knee joint.¹³ However, in this particular case, the patient presented with a spontaneous rupture of the cyst, despite having no prior complaints. Therefore, it is important to consider that degenerative processes may also be present in cases without preceding symptoms.

In conclusion, the prompt and effective use of ultrasound plays a crucial role in diagnosing and treating Baker's cyst and its associated complications. Baker's cyst and its complications, which contribute to knee pain, should be considered in clinical settings specializing in joint pain. When a patient presents with extensive ecchymosis in the calf, it is important to consider the possibility of a ruptured Baker's cyst, even in the absence of a previous diagnosis. Ruptured cysts can lead to complications such as compartment syndrome, necessitating immediate intervention. Patients with a ruptured Baker's cyst should be closely monitored and followed-up to detect and manage potential complications.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

This study is entirely author's own work and no other author contribution.

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