

The crescent sign of ruptured baker's cyst

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A 69-year-old Japanese man with bilateral knee osteoarthritis presented with swelling and mild pain in his left lower leg. At least 6 months before, he noticed a soft and nontender lump at the left popliteal fossa. Seven days before, pain and swelling of the left calf developed acutely. He saw an orthopedist and was prescribed non-steroidal anti-inflammatory drugs with a diagnosis of nonspecific muscular pain. Although the pain was moderately alleviated, he noticed of mild tenderness in the left calf. Three days before, he visited another clinic because the swelling did not improve and the skin color gradually turned bluish purple, but the cause of his symptom remained unclear. In the next 3 days, the swelling then shifted from a proximal to a distal part of the left calf. Finally, he presented to my clinic.

On physical examinations, swelling with a large ecchymosis ranged from the lower left leg to the dorsum of left foot (Figure 1A,B). There was no numbness, coldness, nor paralysis. Dorsal pedal pulses were bilaterally palpable. No abnormal findings were seen in other limbs. The picture of the left leg which was taken 2 days before showed a swollen calf and a distinguished bruise below the medial malleolus (Figure 2). An ultrasound examination of the leg revealed diffused fluid collection along the intermuscular fasciae from the popliteal fossa and the medial malleolus (Figure 1C). Compression ultrasonography showed intact veins in the lower extremity. Under close observation, the symptoms diminished gradually and then were resolved within 1 month. After consideration of the clinical course and exclusion of other diseases, I made a definitive diagnosis of ruptured Baker's cyst.

Baker's cyst, or popliteal cyst, is a benign lesion filled with fluid on popliteal fossa, which origin is the gastrocnemio-semimembranosus

bursa. Although Baker's cyst is mostly asymptomatic, its rupture leads to synovial fluid flowing into the gastrocnemius muscle layers, resulting in calf pain.¹ Its presentation mimics deep vein thrombosis (DVT) known as pseudothrombophlebitis.² The calf pain is due to inflammatory and proteolytic content of synovial fluid,³ which typically does not occur in other hemorrhagic diseases such as ruptured varices or bruises. Most cases of ruptured Baker's cyst are self-limiting, and conservative treatment including elevation of the affected leg and local heating is indicated,³ although some surgical interventions are sometimes considered.²

Bruising below the medial malleolus, which indicates fluid in the calf gravitating toward the ankle, is a finding suggestive of ruptured Baker's cyst and called the crescent sign.⁴ It is reported to be the only clinical sign for differentiating ruptured Baker's cyst from DVT.³ However, they are often difficult to distinguish by physical examinations only. In fact, they are sometimes accompanied together.⁵

Ultrasound is a key diagnostic tool. It may be helpful for ruling out DVT for skillful physicians by discovering compressible veins of lower extremities at the bedside ultrasonography.⁶ A fluid collection along the intermuscular fascia layers is suggestive of ruptured Baker's cyst.^{1,3} Unfortunately, Baker's cyst itself is hard to detect after its rupture.³

This case delivers two important messages. Firstly, we would find it very hard to diagnose ruptured Baker's cyst if we do not recognize its findings including the crescent sign. Secondly, ultrasound is a powerful and easily available tool for seeing a swollen leg. Rapid and correct diagnosis of ruptured Baker's cyst may be cost-effective and patient-friendly.



FIGURE 1 A, A frontal view of the whole legs. B, A lateral view of the left leg. C, A longitudinal ultrasound image of the medial left calf. Diffused fluid was collected behind the gastrocnemius muscle (white arrowhead)

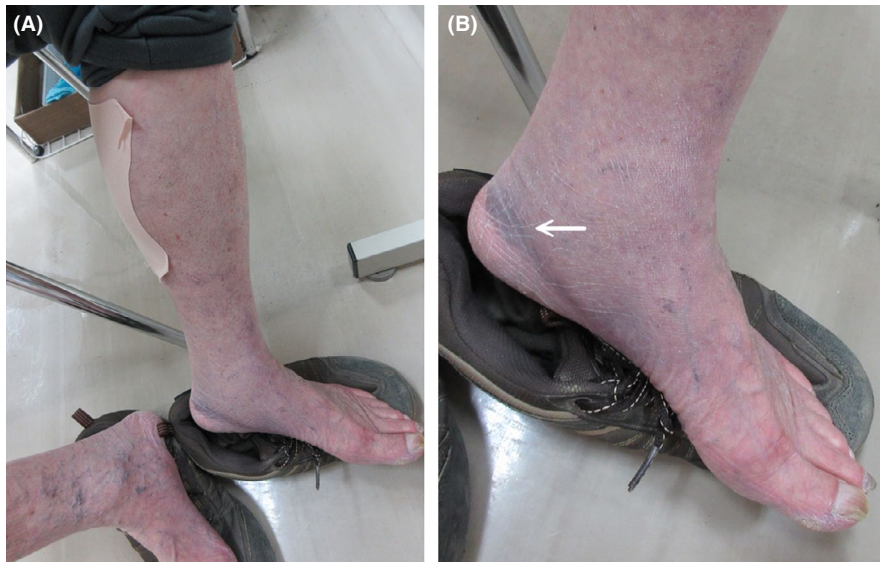


FIGURE 2 A, Appearance 3 d before. An anti-inflammatory patch was applied at the location of the painful lesion. B, An extended image of the left medial malleolus. The crescent sign can be seen here (white arrow)

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CONFLICT OF INTEREST

The author has stated explicitly that there are no conflicts of interest in connection with this article.

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