

Signs in Imaging

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The Ankle Teardrop Sign¹

APPEARANCE

The teardrop sign (1) is a teardrop-shaped opacity that extends anteriorly from the talotibial joint and continues along the neck of the talus on lateral radiographs of the ankle (Fig 1).

EXPLANATION

The teardrop-shaped opacity represents fluid in the inferior space of the anterior compartment of the ankle joint. A lateral radiograph of the ankle is the optimum projection for depicting the teardrop sign and confirming ankle effusion (1–3). The reason for this is directly related to the anatomy of the ankle. Because the articular capsule is tightly bound—medially by the deltoid ligament and laterally by the talofibular ligament—the articular capsule restricts joint fluid to anterior and/or posterior extension only (1,2). Positioning of the foot in the neutral position is important because dorsiflexion increases false-positive findings, and plantar flexion decreases sensitivity (4).

DISCUSSION

Ankle effusion, an excess of fluid in the synovial space, has been associated with several local and systemic disorders. The differential diagnosis of ankle effusion includes common causes, such as gout, infectious arthritis, rheumatoid arthritis, synovitis, and trauma-associated hemorrhage. Less common causes include allergic reaction, bone neoplasm, hemophilia, juvenile chronic arthritis, leukemia, lymphoma, neuropathic joint disease, pseudogout, and acute rheumatic fever (5). A review of the patient's medical history and a physical examination are very important in narrowing the differential diag-



Figure 1. Lateral radiograph of the ankle shows the teardrop sign (*) caused by a post-traumatic effusion secondary to a fracture. The fracture of the distal fibula is not clearly evident in this projection.

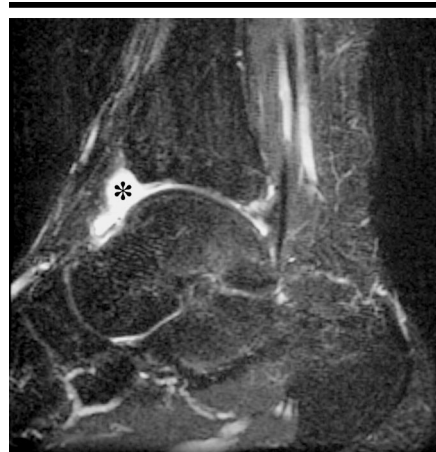


Figure 2. Teardrop sign (*) on sagittal fast spin-echo, inversion-recovery 5,000/30/150 (repetition time msec/echo time msec/inversion time msec) MR image.

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nosis into at least one of four broad categories: infectious, inflammatory, traumatic, and metabolic. Aspiration of the joint can be very useful if the patient's medical history is unclear. Other radiographic abnormalities can be helpful, as well.

The amount of fluid required for radiographic visualization of ankle effusion has been reported as 5 mL (1,2). Sonography and magnetic resonance (MR) imaging (Fig 2) are increasingly sensitive in detection of smaller effusions of 2 mL and 1 mL, respectively (2). If the detection of small effusion is clinically important, the use of these modalities may be warranted, although both sonography and MR imaging can also demonstrate effusion in asymptomatic and otherwise healthy individuals (6,7).

In summary, the teardrop sign, which can be seen on the standard lateral radiograph of the ankle in the neutral position, is useful in diagnosing ankle effusions of 5 mL or larger.

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