

## [ Orthopaedic Surgery ]

# Symptomatic Ganglion Cyst of the Popliteus Tendon Treated With Ultrasound-Guided Aspiration and Steroid Injection: A Case Report

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Ultrasound-guided aspiration of symptomatic ganglion cysts about peripheral joints is a valuable and routinely performed therapeutic modality. Intratendinous and peritendinous ganglia involving the popliteus tendon are rare, with only 3 cases previously reported. These ganglion cysts are usually small and can easily be mistaken for normal anatomy on magnetic resonance imaging (ie, small periarticular vessel or fluid within the popliteus tendon sheath), leading to delayed patient diagnosis and appropriate treatment.

**Keywords:** ganglion cyst; popliteus tendon; sonographically guided aspiration; knee sonography; lateral knee pain

**G**anglion cysts are benign “tumor-like” masses that arise from the mucinous degeneration of collagenous structures.<sup>5,11</sup> They may lack a synovial epithelial lining and are caused by chronic irritation, repetitive injury, and ischemia.<sup>5,11</sup> Ganglion cysts have been reported in most joints throughout the body, commonly about the wrist. In the knee, they have been described in many locations, including the joint capsule, anterior cruciate ligament, posterior cruciate ligament, Hoffa fat pad, menisci, and the semimembranosus tendon.<sup>1-4,9,10,13</sup> Ganglion cysts involving the popliteus tendon are rare. To date, only 3 cases of ganglion cysts involving the popliteus tendon have been described, and none with successful ultrasound-guided treatment.<sup>10,13</sup>

Magnetic resonance imaging (MRI) is the gold standard for identification and localization of ganglion cysts preoperatively.<sup>1,3</sup> Recently, ultrasound has been shown useful in detecting these lesions around the knee.<sup>6</sup> Park et al described the use of ultrasound in the preoperative localization of 23 cystic lesions about the knee<sup>6</sup> that underwent intralesional injection of indigo carmine with ultrasound guidance. The dye allowed surgeons to localize the lesions intraoperatively.

Ultrasound has the advantage of real-time guidance for percutaneous needle aspiration, thus decreasing potential complications to surrounding anatomy. The successful ultrasound-guided aspiration of a ganglion cyst about the

medial cuneiform of the foot in close proximity to a first-order branch of the dorsalis pedis artery has been described.<sup>8</sup>

Intratendinous and peritendinous ganglion cysts about the popliteus are usually small and can easily be dismissed on MRI.

## CASE PRESENTATION

A 47-year-old man presented for evaluation of posterolateral knee pain of 4 months' duration. The pain worsened with full knee extension and with sport activities. There was sharp pain to palpation over the popliteus tendon just above the hiatus. There were no signs of meniscal pathology or posterolateral rotatory instability at 0° or 30° of knee flexion. Figure four, Cabot, and McMurray tests yielded normal findings. MRI revealed a ganglion cyst (3 × 4 × 4 mm) arising from the popliteus tendon at the level of sulcus (Figure 1). Ultrasound-guided aspiration and steroid injection of the cyst were planned.

## SONOGRAPHIC TECHNIQUE

Ultrasound was used to confirm the diagnosis of a ganglion cyst and provide guidance for needle aspiration, fenestration, and subsequent steroid-anesthetic mixture injection. Scan was performed with a 12-5-Mhz linear transducer on an IU22 scanner

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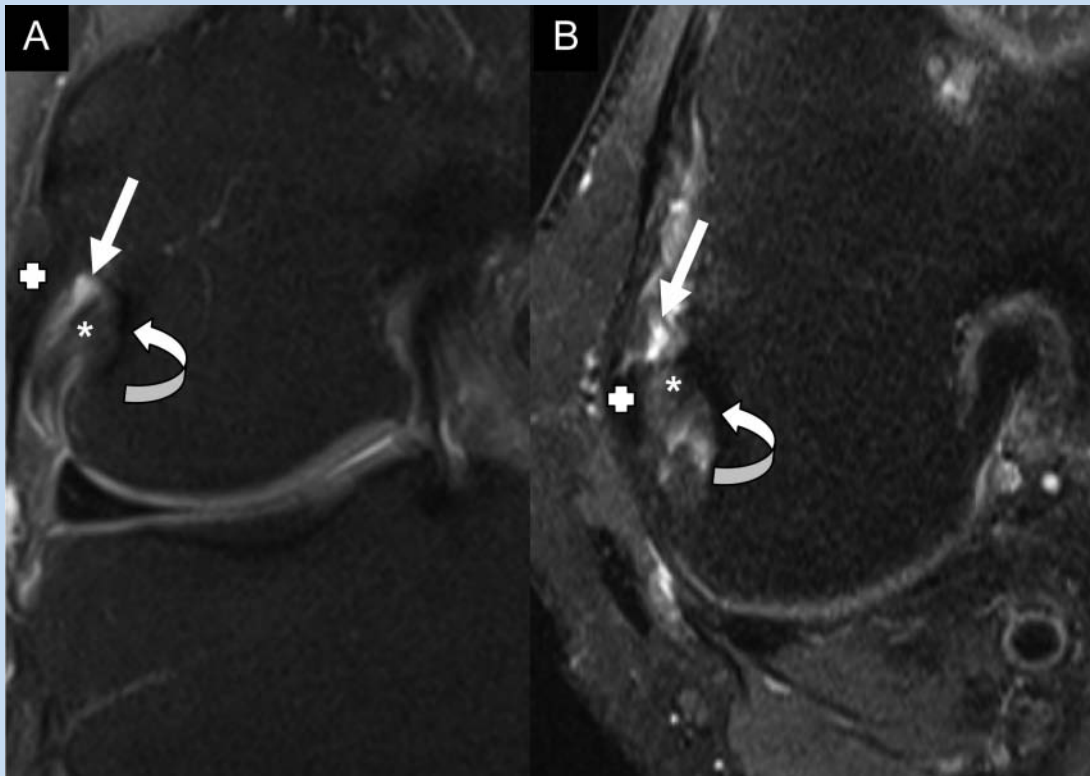


Figure 1. Coronal (A) and axial (B) proton density fat-suppressed magnetic resonance images of a knee show a small cystic structure (straight arrows) within the anterior margin of the popliteus tendon (asterisks), reflecting a ganglion cyst. Notice the mild hyperintensity of the popliteus tendon reflecting mucinous degeneration. Curved arrows indicate popliteus sulcus of the femur; crosses indicate fibular collateral ligament.

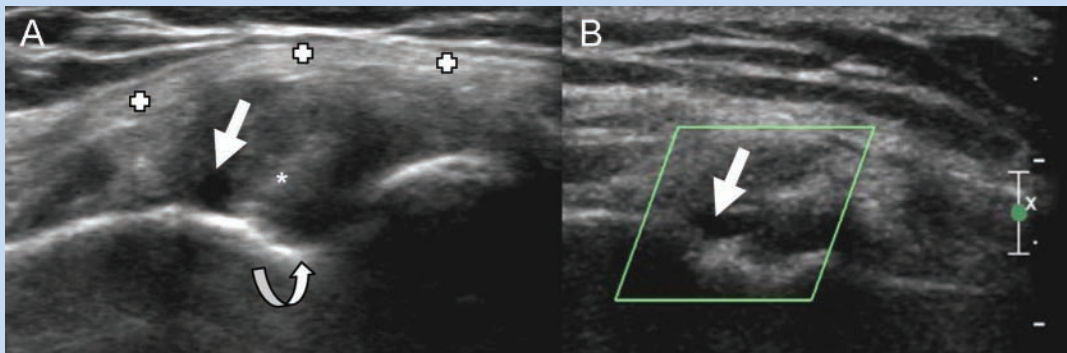


Figure 2. (A) Long axis grayscale ultrasound image along the lateral aspect of the knee demonstrates a small anechoic structure (straight arrow) within the anterior margin of the popliteus tendon (asterisks), reflecting a ganglion cyst. Curved arrow indicates popliteus sulcus of the femur; crosses indicate fibular collateral ligament. (B) Power Doppler image demonstrates no internal flow within the cyst (straight arrow), confirming that it is not a vessel.

(Philips Medical Systems, Bothell, Washington) in a lateral decubitus position (Figure 2). Skin anesthesia was obtained with injection of 1 mL of 1% lidocaine. A 22-gauge, 3.5-in. spinal needle was then advanced under direct sonographic guidance into the ganglion cyst (Figure 3). The cyst contents were aspirated

and the walls fenestrated with the needle tip. A therapeutic steroid and anesthetic mixture was delivered.

Immediately following the procedure, there was a complete resolution of lateral knee pain. Twelve months following the procedure the knee pain was 0/10.

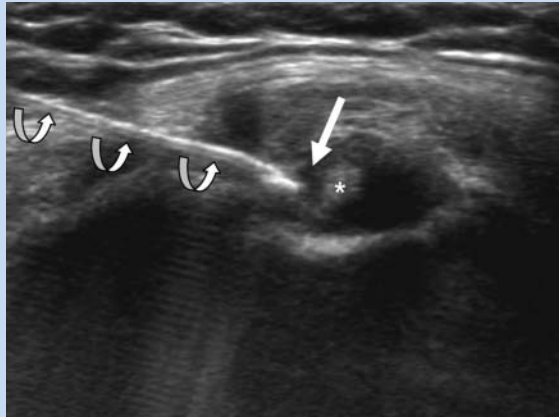


Figure 3. Long axis grayscale image along the lateral aspect of the knee demonstrates ultrasound-guided aspiration, with the tip of a spinal needle (curved arrows) in the ganglion cyst (straight arrow) along the anterior margin of the popliteus tendon (asterisk).

## DISCUSSION

The popliteus is a dynamic internal rotator of the tibia, which contributes to posterolateral stability of the knee.<sup>12</sup> It arises from the posterior surface of the proximal medial tibia, extends through the knee joint via the popliteus hiatus, and inserts into the posterior horn of the lateral meniscus and into the lateral margin of the lateral femoral condyle.<sup>12</sup> The popliteus tendon is stabilized by the popliteomeniscal fascicles and the popliteofibular ligament, which add further posterolateral stability to the knee.<sup>12</sup>

Tendons undergoing mucoid degeneration contain large vacuoles filled with proteoglycans and glycosaminoglycans.<sup>3,11</sup> Increasing amounts of mucinous fluid within the tendons

can result in ganglion cyst formation. Intratendinous and peritendinous ganglia are often painful and may interfere with joint mechanics, resulting in snapping, catching, and locking.<sup>4,7</sup>

Ganglion cyst of the popliteus tendon is a rare entity that can cause posterolateral knee pain. Ultrasound-guided aspiration of symptomatic ganglion cysts is a valuable therapeutic modality because incomplete aspiration often results in cyst recurrence.<sup>8</sup> Ultrasound guidance is especially useful for nonpalpable cysts, those near neurovascular bundles, and those with loculations and internal septations.

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