

## Detached femoral bone plug following anterior cruciate ligament repair

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We report the case of a 16-year-old woman who experienced failure of her bone-patellar tendon-bone (BPTB) reconstruction of her left anterior cruciate ligament (ACL) due to detachment of the femoral bone plug from the endobutton. We have only found one prior report of this unusual complication. This case is also notable in that evidence of this complication is visible radiographically. Most postoperative complications of ACL reconstruction can be visualized only with the assistance of magnetic resonance imaging (MRI).

### Case report

This 16-year-old woman, an avid basketball player, suffered a noncontact injury resulting in rupture of the ACL of her left knee. This was repaired using a bone-patellar tendon bone (BPTB) autograft harvested from the same knee. The graft was attached firmly to a metal endobutton and pulled up through the tibial and femoral tunnels. The endobutton was then positioned securely across the upper opening of the femoral tunnel. The distal end of the graft was secured to the tibial tunnel using a bio-absorbable interference screw.

The patient was seen for followup 18 days following the surgery, and radiographs of the left knee were obtained (Fig. 1). These radiographs demonstrated detachment of the femoral bone plug from the endobutton, and migration inferiorly into the femoral notch.

### Discussion

Replacement of the anterior cruciate ligament (ACL) is performed in over 100,000 patients yearly in the United

States (1). Unsatisfactory results in terms of continued instability, loss of extension, and pain are noted in 1% to 25% of patients following ACL reconstruction (2, 3).

The most commonly used methods for ACL reconstruction involve BPTB or hamstring autografts. Fixation methods include endobuttons, staples, screw-washer fixation, and interference screws. Bio-absorbable interference screws, such as the one seen in this patient, reduce artifacts on subsequent MRI, and can make ACL revision surgery less technically challenging if screw removal becomes necessary (4).

Complications of ACL reconstruction include graft impingement, graft failure, hardware failure, cystic degeneration within the graft, arthrofibrosis, postoperative infection, and donor-site abnormalities (5). These complications may be suspected based on clinical findings and physical examination.

Hardware failure following ACL repair has been reported, including instances of intra-articular migration of an endobutton (6, 7) and fracture and migration of a bio-absorbable screw (8). Intra-articular migration of a bone plug appears to be uncommon. We are aware of only a single prior report of detachment of a femoral bone plug from an endobutton, with intra-articular migration of the bone plug (9).

Conventional radiography offers an easy and cost-effective way to routinely evaluate the knee after ACL reconstruction. However, many complications of ACL reconstruction are not visible on radiography. When clinically indicated, knee MRI provides direct visualization of the graft integrity as well as a wide variety of postoperative complications (3, 5, 10).

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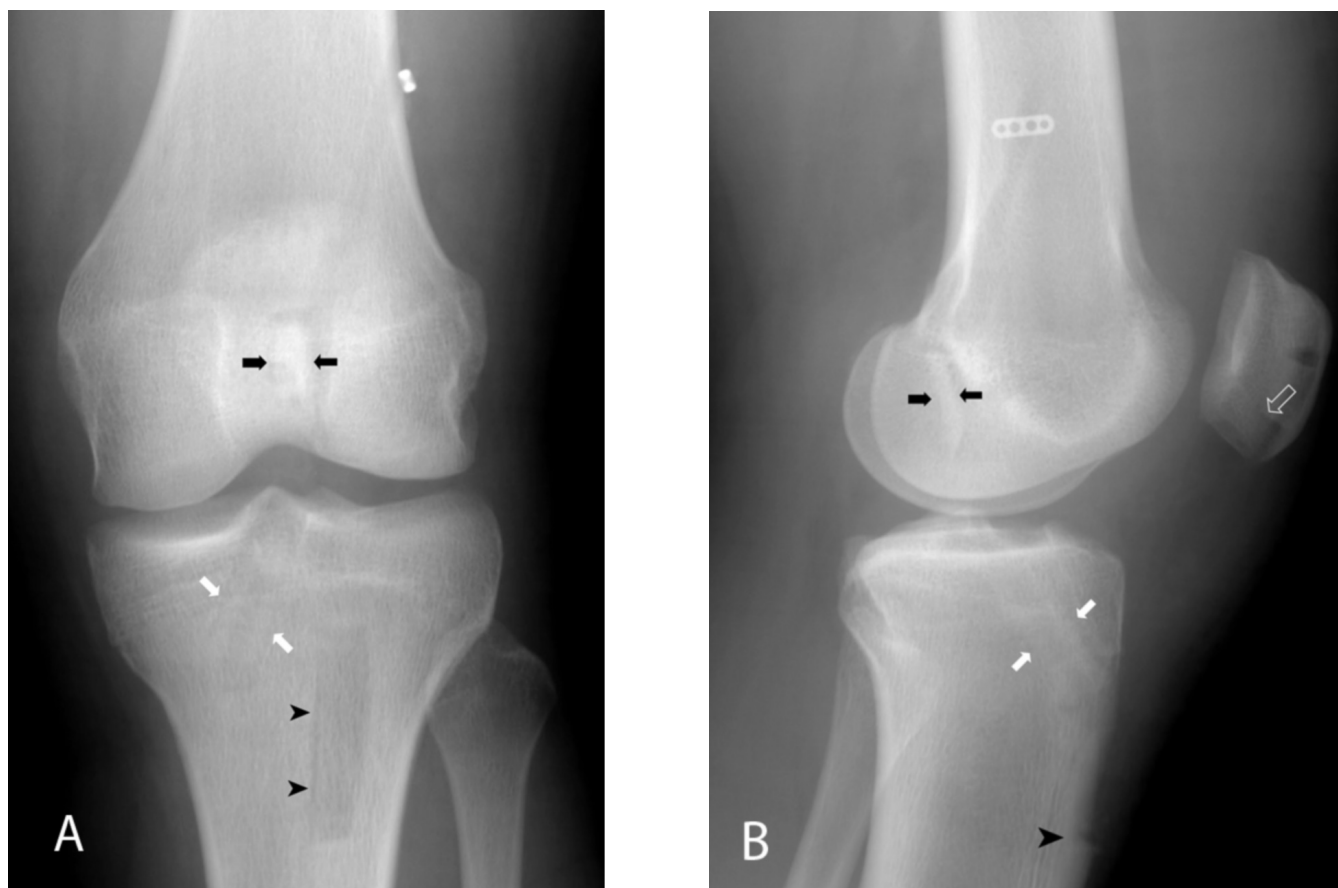


Figure 1. 16-year-old woman with detached femoral bone plug. Anteroposterior (A) and lateral (B) views of the left knee. A rectangular fragment of bone is projected over the femoral notch on both views (black arrows). This bone fragment has become detached from the metal endobutton at the top of the femoral tunnel and has migrated down into the intercondylar notch. Lucencies in the patella (white open arrow) and tibial tuberosity (black arrowheads) are noted representing bone-patellar tendon-bone autograft harvest sites. The bio-absorbable interference screw is noted in the tibial tunnel (white arrows).

In summary, it is common practice to evaluate knees with radiography following ACL reconstruction. Physicians who review these radiographs should be aware both of the possibility of graft displacement and of its radiographic appearance.

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